DETERMINANTS OF FINANCIAL LITERACY AND BEHAVIOURAL BIASES OF YOUNG ADULTS: THE COMPARISON OF BRISTOL, UK AND ISTANBUL

ISIK AKIN

A thesis submitted in partial fulfilment of the requirements of Bath Spa University for the degree of Doctor of Philosophy

Bath Business School, Bath Spa University

June 2021

Abstract

Financial literacy is defined as the combination of financial knowledge, financial behaviour and financial attitude and the ability to use this combination in financial decisions (OECD, 2015). A high level of financial well-being depends on individuals financial literacy level because a high financial literacy level increases the possibility of taking good financial decisions (Lusardi, 2010). However, financial literacy is not the only factor that affects taking accurate financial decisions; at the same time, behavioural biases should be considered. Behavioural biases are systematic errors that keep individuals away from rationality (Shefrin, 2002). The biases might cause unhelpful or even hurtful decisions. Therefore, a high level of behavioural biases negatively affects the financial well-being of individuals (Montier, 2007).

In this research, the relationship between financial literacy and behavioural biases among young adults in Bristol, UK and Istanbul, Turkey was examined. A young adult can be defined as an individual within the age range of late teens or early twenties to thirties (Smith, 2018; OECD, 2019). The main aim of the research is to identify whether young adults can be prevented from behavioural biases by increasing their financial literacy. This research contributes to the literature by investigating the relationship between financial literacy and behavioural biases of young adults because this relationship has not been investigated adequately and also different target group have been examined in the literature.

In the literature different components have been used in order to measure financial literacy. This research contributes to the literature by identifying the most important components of financial literacy. As a result of the investigation financial knowledge appears to be the most important factor. It also highlights the importance of the

application of financial knowledge as another contribution. The critical point is that young adults may not improve their financial well-being unless financial knowledge is used in practices.

Another contribution of this research is to reveal the most common behavioural biases among young adults in Bristol, UK and Istanbul. These biases among young adults in Bristol, UK, are over-optimism, anchoring, categorisation, conservatism while framing, cognitive dissonance, the illusion of knowledge, and cue competition in Istanbul. The relationship between financial literacy and behavioural biases was investigated via Structural Equation Modelling (SEM) and ANOVA analysis. The result of the research reveals that there is a positive relationship between financial literacy and behavioural biases. Therefore, a high level of financial literacy does not reduce behavioural biases.

Acknowledgements

I would like to thank my supervisor Dr Inna Pomorina for her expertise, kindness, and most of all, for sharing her views and her research insight. Without her assistance, completing this work would not have been possible. At the same time, I would like to thank my second supervisor, Dr Lu Liu, for her valuable opinions, support and guidance. Also, I would like to thank my family for their support. Additionally, I would like to thank my lovely wife for her patience and understanding and my little daughter, who gave me strength with her presence.

Table of Contents

Tables

Figures

Abbreviations

BB = Behavioural Biases

CUL = Culture

G20 = Group of Twenty

GDP = Gross Domestic Product

FA = Financial Attitude

FB = Financial Behaviour

FED = The Federal Reserve System

FK = Financial Knowledge

FL = Financial Literacy

INFE = International Network on Financial Education

NFEC = National Financial Educators Council

OECD = The Organiation for Economic Co-operation and Development

PACFC = President's Advisory Council on Financial Capability

TRCB = Turkey Republic Central Bank

UCL= University of College London

UK= United Kingdom

USA = United States of America

Chapter One: Introduction

Overview

The first chapter covers the context and the scope of this thesis through the following discussions – research background; problem statement; research aims and objectives; research methodology and structure of the thesis.

1.1. Research Background

In recent years, financial literacy has become of great interest among various groups, such as researchers, governments, financial marketeers, employers, bankers and other organisations. Its significance has increased because the political, economic and demographic variables have changed, the financial markets have become more complex, and new financial products have been developed (Selvakumar *et al*., 2018). However, up until 2000, there had been no adequate research on financial literacy. Mason and Wilson (2000) emphasised the importance of knowing the correct definition of financial literacy terms for improving financial wellbeing. In this context, financial literacy is defined as the ability to gain an understanding of evaluating the knowledge necessary to make decisions, being fully aware of the potential financial consequences. Also, financial literacy has been defined as the ability to achieve individual financial wellbeing through a combination of awareness, skills, attitude, and behaviour appropriate for making good financial decisions (OECD and INFE, 2011).

After the 2008 Global Financial Crisis, the investigation of financial literacy has become important for helping to understand the underlying factors that led to such a crisis (Paiella, 2016). In fact, a low level of financial literacy was identified as a factor that exacerbated the effects of the global financial situation in 2008. Financial literacy,

hence, is now recognised on a global scale as a critical element of economic and financial stability and development (INFE, 2009).

Today, the financial well-being of most of the young adults is gradually getting worse. The debts of young adults are increasing every single day. These debt burdens cause great anxiety among young adults. Especially in the USA, 25 year olds and younger people go bankrupt very quickly (Lusardi *et al*., 2010). This shows that young adults do not have enough knowledge to make successful financial decisions. This statement was supported by OECD (2015), Mandell (2016), Eker (2017). At the same time, it has been revealed by Lusardi and Tufano (2009) that people with low financial literacy have higher debts, less savings, they lack money management skills and do not make a plan for their retirement. Financial literacy is an important component of good financial decision-making, so young adults need to have more financial knowledge.

Nowadays, several global institutions, such as the Jump$tart Coalition for Personal Financial Literacy, the National Endowment for Financial Education and the Global Financial Literacy Excellence Centre, have been conducting financial literacy studies. The aim of these institutions is to increase individuals' financial knowledge. The assumption is that an increase in financial knowledge will lead to changes in financial behaviours and practices. Whether this assumption is true or not, it is a significant feature of behavioural finance. This calls for investigation into the financial behaviour of the individuals, with reference to both the economics and the psychological sciences (Hilgert *et al.*, 2003).

Motivations that guide behaviours may differ depending on variables such as a person's age, occupation and educational background. The same motives and needs can create other forms of behavior in individuals. For example, according to Sarlak

(2012), individuals may purchase shares to build a good reputation, and in doing that, they let other individuals know who they are, what they do and how they do it. Sometimes, different motives and needs can lead to the same behaviour in different people. One can buy the stock for security needs, that is, for earning money, while another can buy for the need to gain dignity in order to look successful and superior (Usul *et* al., 2002). In many developed capital markets, investors are tried to be trained through direct knowledge. Investors need to increase their financial literacy and be aware of the factors posed by behavioural finance in order to make rational decisions (Agnew and Szykman, 2005; Alkaya and Yagli, 2015). The investor's knowledge level helps them make investment decisions that are appropriate for their investment objectives and risk profile. The fact that investors have high financial knowledge and experience helps them to act rationally in their investment decisions and get more returns from other investors (Hayta, 2011).

Regarding traditional finance theories, individuals are defined as rational beings, who behave in accordance with this rationality. Traditional finance theories are not interested in how individuals behave in reality and the consequences of their behaviours. In contrast to traditional finance theories, it is now generally accepted that individuals do not behave rationally in terms of behavioural finance. Financial behaviour is defined as the application of psychology to finance (Shefrin, 2002). According to Kahneman and Rieppe (1998), behavioural biases are systematic errors of judgment that keep individuals away from rationality. In short, behavioural biases affect individuals' financial decisions as much as their financial literacy. Studies (Capuano and Ramsey, 2011; Garcia, 2013; OECD, 2013; Alkaya and Yagli, 2015; Chen and Lemieux, 2016) have shown that individuals' financial decisions are affected by both financial literacy and behavioural biases. However, there has been a lack of

research examining the relationship between financial literacy and behavioural biases. Hence, this research will address this gap.

Young adults in Bristol and Istanbul were selected for this study. Bristol is the biggest city in South West England, and it is the eighth-most significant contributor to the UK economy (City Bristol Council, 2018). According to the Economic Brief of Bristol Report (2018), Bristol attracts investment and is rated first among the English Core Cities. Istanbul generated 40% of Turkey's GDP in 2018, and it is the biggest city in the country (Turkey Statistical Institution, 2018). Whilst the population of Bristol is significantly lower than that of Istanbul, and its economy is a lot stronger. 21.6% of Bristol's population and 34.2% of Istanbul's population is composed of young adults aged 18 to 29, which makes the young adult percentage higher compared to the national population average (City Council Bristol, 2018 and Turkey Statistical Institution, 2018). Therefore, young adults in these two cities will be compared. In relation to the variables of interest, this research is focused on cultural, socio-demographic and economic aspects (Xu and Zia, 2012; Cameron *et al.,* 2014; Potrich *et al.*, 2015) of young adults in Bristol and Istanbul to uncover the determinants of financial literacy.

To sum up, the economies of Bristol and Istanbul are highly influenced by young adults' financial decisions given the high proportion of the population they represent. Existing financial goods and services, such as pensions, investment, savings, credit, mortgages and insurance, are all affected by young adults' financial decisions. Therefore, the longer-term potential growth rate is directly affected by individuals' financial decisions (Selvakumar, 2018). Financial decisions are taken depending on individuals' financial literacy level under the influence of behavioural biases. As above

mentioned, in order to identify cultural, social and economic factors in relation to financial literacy, Bristol and Istanbul were selected for the investigation. At the end of this study, the relationship between financial literacy and behavioural biases were investigated.

1.2. Problem Statement

The quality of life of individuals in relation to finance depends both on their financial resources and their ability to use these financial resources effectively. Most individuals have insufficient financial resources and are uneducated in the management of these financial resources. For this reason, financial literacy is not only crucial for the financial wellbeing of the future but also today (Hayes, 2010 in Gokmen, 2012).

As a result of innovation and globalisation, the variety of financial services and the complexity of financial products are increasing, which means there are many circumstances where individuals need to manage their finances. Moreover, people might be more vulnerable to financial fraud and inclined to unwise financial decisions due to the increasing complexity of financial matters. The complexity of new financial products and the widespread usage of excessive indebtedness can lead to financial problems in societies (OECD, 2018; 16). In order to find a solution to this problem, individuals need more financial knowledge (Dasdogen, 2015). Thus, governments and regulatory bodies have tried to raise individuals' financial literacy level through financial education (OECD, 2018).

At Russia G20 (2013) and by the OECD (2013), it was reported that a significant number of societies have insufficient knowledge about basic financial products, often not understanding the risks associated with these products. Another significant finding

is that individuals with a low financial literacy level do not make plans for their future, and they do not make decisions about the management of their financial resources effectively.

The Russia G20 and OECD (2013) study findings were supported by Bird *et al*. (2014), who elicited that the individuals with a low level of financial knowledge have a higher level of borrowing and experience difficulties when doing so. Moreover, they save less, use high-cost mortgage loans and plan inadequately for retirement, than their more financially literate counterparts. Individuals must have a certain level of financial knowledge to purchase the financial products and services they need. Individuals need to be aware of their rights and responsibilities as financial consumers, being also adequately equipped to manage effectively the various risks they face, such as investment risks and investment secrecy (Miller *et al*., 2009).

According to OECD (2016), the UK and Turkey are faced with a low level of financial literacy problem. That is, many individuals in the UK and Turkey are affected by their behavioural biases due to their low financial literacy level, which impacts negatively on their financial wellbeing and the economy as a whole. For instance, in 2018, unsecured debt in the UK, which includes personal loans, credit cards, store cards and overdrafts, reached the highest level ever. Hence, it is vital that people need to learn to talk about debt, which calls for financial education. If more financial knowledge were to be given to people, they might feel more comfortable about their financial situations (The Guardian, 2019).

Financial literacy is not only an issue for developing economies. It also concerns investors in highly developed financial markets because financial products in developed markets are more complicated. Investors in these markets face financial

losses due to ineffective planning and their inability to identify market uncertainties and risks with it (Zucci, 2019). Therefore, developed economies should pay attention to financial literacy as much as developing economies.

The Global Financial Crisis 2007/08, also known as the subprime mortgage crisis, has revealed that financial literacy is not adequately taken into account in both developed and developing economies (Klapper *et al.*, 2013). The low level of financial understanding was the main reason for the subprime mortgage crisis. According to Iannicola (2011), it emerged that 28% of mortgage borrowers were faced with higher mortgages payments than they had expected, and most of them did not understand the fundamental features of mortgages. This misunderstanding of the terms used had led them to pay more for their homes than they needed to. Also, predatory lending by financial institutions combined with a lack of financial literacy on the part of borrowers, meant that the subprime loan crisis was inevitable (Guest, 2017).

One of the critical assumptions observed in financial crises is irrationality, which is the main point of behavioural finance resulting from the lack of financial information (Friedman and Kraus, 2011). According to Barberis and Thaler (2003), the main reasons underlying irrational financial decisions include the emotions of individuals and cognitive factors. In the literature, there are few studies that investigate the financial literacy level of individuals and examine its relationship with behavioural biases.

Most of the studies have been focused on specific cohorts, such as university students (Ergun, 2018; Erner, 2016; Alkaya and Yagli, 2015; Potrich *et al.*, 2015; Cameron *et al*., 2014; Sarigul, 2014; Crain, 2013), the elderly population (Lusardi, Mitchell and Curto, 2014; Lusardi and Mitchell, 2008; Xue *et al*., 2018) or the whole population

(Aksoylu *et al*., 2017; Eker, 2017; Guest, 2017; Chen and Lemieux, 2016; Kunovskaya, 2010; Tschache, 2009; Volpe, Kotel and Chen, 2002). This study differs in that the focus is solely on the 18-29 age group. The results of this research will reveal whether there is a significant relationship between financial literacy and financial behaviour in this population. Financial literacy levels of young individuals have not previously been examined. Also, individuals aged 18 and 29 who have a different culture and economic conditions have not been compared previously. Moreover, the behavioural biases of young individuals have not been investigated. The financial decisions of this age group are crucial for economies because the future of the economy is shaped by them. It is anticipated that the findings of this study will determine how individuals could avoid behavioural biases via financial literacy, i.e. that it will reveal the most important factors for promoting financial literacy.

In summary, financial literacy is one of the main competencies to make good financial decisions. However, it is not only a significant factor to make good financial decisions. Behavioural biases which affect individuals' financial decisions play an important role in this process. On the one hand, individuals can make good financial decisions via financial literacy; on the other hand, individuals can make irrational financial decisions because of behavioural biases. Although financial literacy has become a very important topic in the world as well as Turkey and the UK, financial literacy studies are not sufficient in the literature. Especially, there are limited studies that are assessing financial literacy level and examining its relationship with behavioural biases in the literature.

1.3. Research Aims and Objectives

The main aim of the study is to identify ways to protect young adults in Bristol and Istanbul from behavioural biases by increasing their financial literacy level. In other words, it is aimed to reveal the relationship between the level of financial literacy of young adults and the level of behavioural biases that may influence individuals' financial decision making process. Behavioural biases are also important for individuals to make good financial decisions, as well as financial literacy. In so doing, they will be able to have information that could guide them into making good financial decisions (Loerwald and Stemmann, 2016). However, the relationship between these two concepts, which are of great importance for young adults' financial decisions and behaviour, has not been the subject of many studies yet. The relationship between financial literacy and behavioural biases should be highlighted in order to design an effective financial education program. Also, the most common behavioural biases should be revealed to reduce the impact level. In this context, the relationship between financial literacy levels of young adults, whose financial decisions are important not only for their own economic welfare but also for the economy of the society in which they live, and the level of behavioural biases they may be exposed to when making their financial decisions, were examined.

Nowadays, the debt level of young adults increases every day around the world. This burden of debt can cause great anxiety among young adults. They can bankrupt very quickly (Lusardi and Scheresberg, 2013). It shows that young adults are not able to make good financial decisions (Lusardi *et* al., 2010). This may be due to the lack of financial literacy and a high level of behavioural biases. Therefore, the main aim of the

research was to reveal the relationship between financial literacy and behavioural biases among young adults in order to increase their financial well-being.

The main research question was developed to address the above aims.

"How behavioural biases vary according to the financial literacy level among young adults in the UK and Turkey?"

On that point, the most important factor that helps to increase the financial literacy level should be known in order to increase it. Also, the most common behavioural biases among young adults in Bristol, UK, and Istanbul should be revealed to protect them from behavioural biases' negative effects. In addition to this, the relationship between financial literacy and behavioural biases should be examined. Also, cultural and socio-demographic factors should be considered. In this context, four sub-research questions were developed in order to investigate the main research question of this thesis. They are;

1- What is the relationship between financial literacy and behavioural biases for young adults who live in British and Turkish culture?
2- What are the most common behavioural biases among young adults who live in British and Turkish culture?

The second aim of the research is to uncover the most important factors that influence the level of financial literacy of young adults, in particular, clarify the social and cultural factors that impact on the financial literacy level of young adults. The financial literacy level of young adults is substantial for themselves, economies and societies. Generally, some of the young adults may gain their financial independence newly that depends on some factors such as the length of the education. If they do not have

knowledge about the management of their finance, most probably they will face financial distress in the future even if they graduated from the schools with the best grades. Therefore, a high level of financial literacy of them is necessary for continuing the healthy economy (Kiyosaki, 2011). Low levels of financial literacy increase the possibility of individuals being under the influence of behavioural biases when making financial decisions. Hence, improving financial literacy would help to decrease the negative effects of behavioural biases (Vera, 2017). Therefore, the most significant factors should be known to raise the level of financial literacy.

The sub-research question to address to above aim is;

3- What are the most significant factors in relation to raising the financial literacy level of young adults?

The third aim of the research is to investigate the relationship between financial literacy levels and behavioural biases of young adults who live in two different culture and economic condition. The culture is a set of norms, beliefs and preferences shared among members of social groups (Guisoet *et al.*, 2006). Culture may affect financial literacy through systematic variation in time or risk preferences (Falk *et al*., 2018). Also, it might affect variation in social norms regarding the incurrence and repayment of the debt as well as informal insurance for households in financial distress (Lindbeck, 1997). According to Yamauchi and Templer (1982), culture can affect the financial knowledge and decision making of individuals through attitudes towards money or differences in financial socialisation. There are substantial differences in financial literacy among young adults in the USA by culture (Lusardi, 2010). The cultural and social effects of young adults on behavioural biases have not been adequately examined and compared, yet.

The sub-research question to address to above aim is;

4- To what extent do social demographic and cultural factors influence young adults' financial literacy and behavioural biases in Bristol and Istanbul?

1.4. Research Methodology

Data was gathered from 415 young adults in Bristol, UK, and Istanbul via an online survey, but only 403 of them were used due to missing data. The research methodology of the study was designed into four parts.

In the first part, structural equation modelling was used to analyse the structural relationship between variables. In the second part, the financial literacy level of individuals was assessed by using the OECD's (2015) financial literacy scale. After the data were collected through the survey method, each component was converted to numerical scores. Thus, the financial literacy score was determined. At the end of part two, the most significant factors were discussed to increase the financial literacy level of young adults who belongs to different cultures which is the third sub-research question of the study.

In the third part, the behavioural biases level of individuals was assessed. The survey was classified by Hirshleifer in 2001, but the classification was very complicated. Later, Montier (2007) simplified this complex classification of behavioural biases in terms of financial decisions. Montier's classification is used for this research project because there is not adequate research on behavioural biases of young adults in the literature. After the data were collected through the survey method, each component was converted to numerical scores. Thus, the behavioural biases score was determined.

At the end of part two, the most common behavioural biases among young adults were revealed that is the second sub-research question of the study.

In the last part of the study, ANOVA analysis was applied to determine whether there is a relationship between financial literacy and behavioural biases among young adults in Bristol and Istanbul that is the first sub-research question of the study. At the same time, the fourth sub-research question was discussed at the end of all parts.

1.5. Structure of the Thesis

The rest of the thesis is organised as follow:

Chapter 2 represents an extensive literature review of financial literacy and behavioural biases. It covers most of the background information that will be needed for understanding financial literacy and behavioural biases.

Chapter 3 demonstrates the framework development of the thesis. It includes the formulation of the research questions and the process of the framework evaluation.

Chapter 4 explains the choice of research methodology and a set of research methods.

Chapter 5 presents the results and detailed reviews of the SEM and ANOVA analysis, financial literacy level and behavioural biases level of young adults, and the relationship between financial literacy and behavioural biases.

Chapter 6 contains the discussion of the findings and framework completion, depending on the results.

Chapter 7 presents conclusions, recommendations, limitations and the future of the research.

1.6. Summary

In this chapter, the background of the study has been introduced, and the research problem has been presented. Also, research aim and objectives that were derived from the research problem has been explained, and methodology has been discussed.

Chapter Two: Literature Review

Overview

The background, the problem and the research aim and objectives of the study has been discussed in Chapter One. From this chapter, the process, findings and conclusions are explained in detail. This begins with a critical review on the literature as Chapter Two. It includes in-depth discussion and justification on financial literacy; financial literacy problem of the UK and Turkey; financial education; behavioural biases; and the relationship between financial literacy and behavioural biases. In this point, the literature review helps to build a theoretical background for this study.

2.1. Definition of Financial Literacy

Today, the definition of financial literacy has become as complex as the economy. There are disagreements between researchers and institutions on its definition. The key definition of financial literacy is the ability of individuals to manage their money. It does not mean that this concept was described as financial literacy, but it was defined in the early 1900s (Remund, 2010). Based on this concept, financial literacy has fallen into five categories since 2000; with these including:

- Managing personal finance,
- Planning future financial needs effectively,
- Communicating financial concepts,
- Knowledge of financial concepts,
- Making good financial decisions.

Hence, it is argued that, financial literacy must be considered as comprising in these five aspects (Remund, 2010). The key issue with this definition is that it considers

making good financial decisions in the definition of financial literacy. Actually, making good financial decisions is the result of a high level of financial literacy (Bodie, 2006). Therefore, it should be distinguished from the financial literacy definition. The definition may also be more relevant, if Remund (2010) had considered the financial behaviour of individuals. The following financial literacy definition considers financial behaviour.

According to Angela *et al*. (2009), a definition of financial literacy should contain financial knowledge, financial skills, and financial behaviour. Financial skills and perceived financial knowledge of individuals are influenced by their financial knowledge. At the same time, the financial behaviour of individuals depends on their financial knowledge, perceived knowledge, and financial skills. Financial literacy is therefore defined as pertaining to the acquisition of knowledge about financial concepts and basic economics (Ibid). In particular, it is people's ability to use financial knowledge and skills to manage their financial resources effectively. One of the limitations of this definition is that it does not consider the financial attitude. On the other hand, one of the strengths of Angela's *et al*. (2009) study is that the importance of financial knowledge for financial literacy has been proven.

Xu and Zia (2012) have also provided a different definition of financial literacy as being a combination of financial knowledge, awareness, skills and capability. Financial knowledge and financial awareness cover knowledge about financial concepts, products and institutions. Financial skills refer to such as the ability to calculate interest payments, whilst financial capability pertains to effective consists of money management and financial planning. It can be clearly seen that although there has been no consensus on the financial literacy definition, financial knowledge is

commonly used in the definition. Regarding which, Lusardi (2008) and, Vijayvargy and Bakhshi (2018) gave definitions that only included financial knowledge.

Financial literacy was divided into two categories, basic and advanced, by Lusardi (2008). Basic concepts include risk diversification, the operation of interest rates and the impacts of inflation. Advanced financial literacy covers aspects such as investment funds, the relationship between risk and return, equities and the operation of bonds. Similarly, Vijayvargy and Bakhshi's (2018) financial literacy definition focuses on an individual's ability to understand about money matters. From this point of view, individuals should know how money works as well as how to invest, manage, reduce tax, donate, earn and create money to become financially literate. Moreover, other variables, such as saving methods, tax planning, financial planning, personal finance and credit cards are also part of the financial literacy (Ibid). These definitions would have been more comprehensive, if they had included financial behaviour and financial attitude since individuals' financial literacy levels are also affected by these factors (Bodie, 2006; Atkinson and Messy, 2012; OECD, 2015; Alkaya and Yagli, 2015).

Financial literacy is a combination of understanding and having knowledge of financial matters. Generally, individuals use it for personal financial activities. Financial literacy enables effective financial decisions, using evaluation and understanding of the relevant information. It ensures that a person can balance his/her expenses with their income. At the same time, it develops individuals' financial attitudes towards information about investment, borrowing, lending, saving, diversification and budgeting (Bodie, 2006).

Moreover, institutions such as PACFC, the OECD, and NFEC have tried to define financial literacy. PACFC (2013) has described it as being the most rational way to

manage financial sources based on individuals' knowledge, skills and access. The OECD (2015) has stated that it is a combination of attitude, knowledge, behaviour, skills and the awareness of how to make effective decisions that impact on a person's financial wellbeing. Financial literacy has been defined by The NFEC (2018) as individuals, families and global communities having the knowledge and skills to best fulfil their goals and make effective and confident decisions. In short, when all the financial literacy definitions put forward by researchers and institutions have been compared, it would seem that financial knowledge, attitude and behaviour should all be included.

To sum up, financial literacy can be defined as a combination of financial knowledge, financial behaviour, and financial attitude (Angela *et al*., 2009; PACFC, 2012; OECD, 2015; Erner, 2016; Chen and Lemieux, 2016; Vijayvargy and Bakhshi, 2018). At the same time, financial literacy is influenced by cultural and socio-demographic factors (Xu and Zia, 2012; Cameron *et al*., 2014; Potrich *et al*., 2015).

2.2. Components of Financial Literacy

Financial goods and services have become more complex and competition has increased among individuals, because of globalisation and technological changes across the world. In addition to this, due to the rapid increase in the world's population and competitions for resources, societies are being directed towards saving both in terms of source and income, to minimize the problems they will face in the future (Eker, 2017). Consequently, Eker (2017) points out the importance of savings because it is part of the financial literacy. The saving that is not transferred to the financial sector does not increase financial wellbeing. For this reason, focusing on financial literacy

would be more useful instead of just saving. Primarily, the components of financial literacy need to be clearly understood to, if its level is to be increased.

Financial literacy can play an important role in preventing financial distress, increasing the financial wellbeing of societies and avoiding future problems. There is no common view about the financial literacy components amongst researchers. In the literature, whilst financial knowledge, financial attitude and financial behaviour have mostly been identified as financial literacy components (Capuano and Ramsey, 2011; Atkinson and Messy, 2012; PACFC, 2013; Alkaya and Yagli, 2015; OECD, 2015; Erner, 2016; Chen and Lemieux, 2016), some researchers have used only financial knowledge in order to measure the financial literacy level (Bucher-Koenen and Ziegelmeyer, 2011; Cameron et al., 2014; Aksoylu et al., 2017). One of the weaknesses of focusing only on financial knowledge is that this ignores the financial behaviour and financial attitude aspects.

Individuals should know financial terms, such as interest rate, compound interest rate, time value of money, inflation, risk-return, to obtain basic financial knowledge. Financial behaviour and financial attitude affect future-oriented money management, such as savings, spending (Alkaya and Yagli, 2015). According to PACFC (2012), Atkinson and Messy (2012), OECD (2015), Erner (2016) as well as Chen and Lemieux (2016), financial knowledge, financial behaviour and financial attitude are three unchangeable and fundamental elements of financial literacy.

2.2.1. Financial Knowledge

Financial knowledge is one of the main components of financial literacy, which can be divided into two main categories: macro and micro. Macroeconomic financial knowledge consists of general economic terms, such as annual budgeting plan,

current account, foreign trade and inflation. On the other hand, microeconomic financial knowledge is related to factors that affect individuals' or institutions' economics and financial situations (Ozdemir, 2011). The idea of splitting financial knowledge is supported by Lusardi (2008).

According to Lusardi (2008), financial knowledge consists of basic and advanced knowledge. Basic financial knowledge is defined as the ability to understand the effects of inflation, knowing about interest rates and understanding the time value of money. Advanced financial knowledge is defined as the ability to understand the stock market, mutual funds, functioning of bonds and basic asset pricing concepts. Likewise, financial knowledge has been described as gaining knowledge of financial terms, financial products and services, such as interest, inflation, and the time value of money, bonds, and the stock market (Atkinson and Messy, 2012). It can be seen that even if financial knowledge is explained without splitting it into categories, these studies have supported the same idea. The most important thing is that financial knowledge should be used in practices. Otherwise, financial literacy may not provide benefit to individuals.

Gokmen (2012), has argued that understanding financial terminology is not sufficient to increase financial literacy unless it is used in practices. This view is supported by Remund (2010) and Capuano and Ramsey (2011). According to them, financial knowledge is the ability to sustain one's personal financial situation and to understand basic financial terms, such as budgeting, investment, borrowing, and saving. In short, if financial knowledge is obtained and effective financial activity is carried out, individuals' financial wellbeing can be improved, thereby becoming financial literate.

Karabacak (2013) contended that a low level of financial knowledge leads to wrong financial decisions and that rational decisions in the long term are hampered. At the same time, individuals with a low level of financial knowledge have difficulties in understanding financial products and financial matters, so they are worried about dealing with them. As a result of this, individuals prefer not to invest and do not connect with financial institutions, thus being exposed to financial exclusion. Long term financial exclusion can result in individuals not having access to financial opportunities and/or exposure to high cost (Capuano and Ramsey, 2011). As a result of this, saving and financial wellbeing will begin to decrease. These scholars' studies would have been much more formative, if they had addressed how individuals could obtain financial knowledge according to their age group.

People have to gain a certain level of financial knowledge to reap the maximum benefit with the limited resources available to them. Moreover, financial knowledge positively affects individuals' financial wellbeing and also helps to avoid financial risks (Temizel and Bayram, 2011). Individuals with a high level of financial knowledge make their investments in terms of future financial planning. They know about the functioning of financial markets and are also prepared for the risk factors and uncertainties involved. Also, financial knowledge is obtained from interactions with family, friends, and media in addition to financial education. (Hilgerth *et al*., 2003). The research has highlighted that financial knowledge can be obtained via financially well-educated family or friends besides financial education programs. Hence, there is a strong possibility that social factors impact on individuals' financial literacy and these should be considered as part of financial literacy.

2.2.2. Financial Behaviour

The welfare of individuals is significantly affected by their financial behaviour, especially during the advent of a financial crisis is taken into consideration (Bernanke, 2006). Individuals' financial wellbeing is determined by financial behaviour so that the most important element of financial literacy is individuals' financial behaviour (Atkinson and Messy, 2012). Such an explanation is unsatisfactory because insufficient financial knowledge individuals exhibit bad financial behaviours. It means that there is a positive correlation between financial knowledge and financial behaviour. In contrast to Atkinson and Messy (2012), Hilgert *et al*. (2003) study found that the most important component of financial literacy is financial knowledge.

Individuals' characteristics, knowledge, identity and psychological factors greatly affect their financial behaviour (Bergner, 2011; Garcia, 2013). Financial wellbeing can be increased with positive financial behaviour, such as savings. Savings are an important element, and they can provide financial security and credit independence. On the other hand, financial wellbeing can be reduced through negative behaviours, such as careless borrowing (Atkinson and Messy, 2012).

One of the main pillars of good financial behaviour is to obtain information about financial products before purchasing them. The market needs to be investigated by individuals in order to make good financial decisions. In doing so, it is more likely that the best option will be chosen, and they are less likely to become a victim of fraud (Atkinson and Messy, 2012). However, Atkinson and Messy (2012) failed to acknowledge the significance of behavioural biases. That is, it is not sufficient to obtain financial knowledge to exhibit good financial behaviour. Most of the time, individuals are affected by behavioural biases, such as self-deception, emotions, heuristic

simplification and social interaction, even if they have financial knowledge. Additionally, there is asymmetric information in the market (Ibid).

Regarding behavioural finance, market systems contain risk, uncertainty, imperfection, and rigidities, so accurate information is not readily accessible. Under the behavioural finance theory, it is argued that individuals' financial decisions are based on cognitive biases and bounded rationality in such an environment (Garcia, 2013). This research attempts to the importance of financial behaviour by examining the irrational behaviour of individuals in the financial system.

According to Capuano and Ramsay (2011), financial behaviour is affected by internal and external factors. Internal factors pertain to cognitive ability and psychological factors, whilst external ones are the social and economic conditions. Financial knowledge interacts with subjective norms, perceptions and financial attitudes to compose financial behaviour (Koropp *et al*., 2014). The important point is revealed by Koropp *et al*., (2014) with the explanation of financial behaviour composition. One question that needs to be asked, however, is whether cultural differences influence financial behaviour.

Whilst young people's financial behaviours start to be shaped in family, and they are also significantly affected by their peers. Their consumer behaviours, especially about product choice, are impacted upon by the latter (Kretschmer and Pike, 2010; Masche, 2010; Moore and Bowman, 2006 in Shon *et al*., 2012). In sum, it is clear that social factors affect individuals' financial behaviour.

2.2.3. Financial Attitude

In essence, individuals' general approach towards events, feelings and opinions are referred to as their attitude (Atkinson and Messy, 2012). According to Henager and

Mauldin (2015), attitude is defined as it is a behavior that individuals have and is expected to exhibit in the face of a situation or event. Financial attitude refers to the savings of individuals regarding their future plans and it is another important aspect of financial literacy. If an individual has a negative attitude towards saving to use in future, most probably that individual will have little tendency to exhibit saving behaviour. Generally, people who care about their short-term needs will be less likely to make savings for emergencies or make long-term financial plans (Hamarat and Ozen, 2015).

Individuals who have awerness of financial attitude exhibit more careful behaviour about spending money and they tend to save more for their future. Therefore they may able to provide good education to their children and increase their welfare in their retirement. Whether individuals exhibit a positive attitude towards saving depends on their financial literacy level. Individuals with a high level of financial literacy tend to prepare budget for their expenses. In addition, they compare the prices of the products they want to buy. As a result of this attitude, they spend their income more carefully and sparingly (Sahin and Baris, 2017).

Situational and circumstantial factors often influence attitudes by contrast to personality, and thus it is more unstable than personality traits. Individuals exhibit different attitude towards money in relation to spending, savings and obtaining money. Firstly, money can be used as a security purpose through saving. Secondly, money can buy social status, which leads to social acceptance and recognition. In this case, money may provide control status and power. Thirdly, expressions of generosity and love can be associated with money. Lastly, money can mean the freedom that allows individuals to escape from daily routines (Stumm *et al*., 2013).

Atkinson and Messy's (2012) research revealed that individuals obtain knowledge about finance in their childhood with pocket money management and that different attitudes are applied to money by young individuals. The possible explanation of this situation might be that individuals' attitudes significantly affect their money management skills in the future.

To sum up, financial knowledge, financial behaviour and financial attitude have been used to measure financial literacy, but the most important factor that helps to increase financial literacy has not been discussed. The sub-research question of "what are the most significant factors in relation to raising the financial literacy level of young adults?" was investigated in order to identify the most significant variable. Therefore, this research will fill the gap in the literature by finding the most important factor that influences financial literacy compared to other factors.

2.3. The Aims of Financial Literacy

The main aims of financial literacy are to provide fundamental knowledge about money, income, money management, saving and investment as well as spending and debt (Tomaskova *et al*., 2011). This includes understanding inflation, interest rate calculation, income sources, tax and other deductions from income, financial planning, insurance, savings, budgeting, short- and long-term savings and investment strategies, risk and return, liquidity, borrowing, financial instruments, credit cost, credit history and rights, and responsibilities as consumers. In short, the aim of financial literacy is to increase awareness of individuals about money, income, money management, saving, investment, spending and debt.

2.3.1. Money

In order to manage money effectively, it is necessary to have knowledge of money. Basic knowledge of money contains basic mathematical calculations, selection and purchase of appropriate goods and services, payment of invoices, understanding of the time value of money (Rooij *et al*., 2007), comparison of the value of financial products, and the effect of inflation (INFE, 2009), calculation of interest and discount rates (World Bank, 2010).

One of the concepts that should be understood within the scope of this basic knowledge is the time value of money. In general, the future value of money is less than its current value. According to the general level of prices, the change in the value of any currency over time can be expressed as the amount of goods and services that the currency purchased in the past, what it can buy today and its purchasing power in the future. Inflation has an important role in financial decisions since its presence means a decrease in the value of money and purchasing power. In other words, inflation causes the general price level of goods and services to increase (Gokmen, 2012).

Another thing to know in relation to money is simple and compound interest calculation. Interest calculated at a set rate over a certain period of time based on a principal amount, is called simple interest. Simple interest is the interest received at the end of the related period. At the end of the period, if the interest amount obtained in that period is reinvested by adding the principal, the interest obtained in the next period is defined as the compound interest rate (Gokmen, 2012). Accurate knowledge about interest, the time value of money and the effects of inflation, accurate determination of time of purchase of goods and services, correct borrowing,

conversion of changes in the purchasing power of money into right opportunities, and estimation of the return of the certain amount of money within the conditions of the day, making the right financial decisions are important and necessary for increasing financial welfare.

2.3.2. Income

Income for the individual is defined as the sum of the values obtained in a certain period at the end of the contribution to production. There are different ways to create income. It can be generated through working, capital rent, interest or profit gained as a result of entrepreneurship (Turkey Statistical Institution, 2019a). The sum of the personal annual disposable income obtained by each individual in the household and the annual income obtained on a household basis is deducted from the taxes paid in the income reference period and regular transfers to other households or individuals (Turkey Statistical Institution, 2019a).

A wage is the benefits that can be provided in money to employees in return for service, subject to the employer and connected to a specific workplace. Individual's wages earned in a calendar year are subject to income tax, stamp tax and social security premium. Direct taxes, such as income tax, corporate tax, wealth tax, land tax, inheritance taxes, as well as indirect taxes (e.g. VAT) included in the sales prices of consumed goods and services, cover a large proportion of state income.

2.3.3. Money Management

According to Kempson (2009), money management skills provide financial control to individuals. Financial control includes being knowledgeable about budgeting, keeping records, establishing income-expenditure balance as well as calculating and

estimating daily living costs. Regardless of the level of income, having knowledge about money management and financial issues contributes greatly to family and individual welfare. For financial success, it is necessary to take financial steps in line with the needs and goals of the family and the individual and to determine and implement the financial targets (Sarlak, 2012). In this point, individuals need to make a financial plan to gain financial success.

According to Hayta (2011), financial planning helps individuals and families to continue their lives within the framework of their income, set their financial priorities, and make savings and investments to aimed at achieving financial goals. Financial planning is not just about budgeting in the short term, for it also includes retirement planning in the long term and planning and realisation of long-term large spendings such as buying a house or a car (Capuana and Ramsey, 2011). According to Gokmen (2012), effective financial planning is a process that encompasses the following aims:

- Determining financial objectives;
- Calculation of current net income;
- Evaluation of options to achieve goals;
- Choosing the most suitable option;
- Implementation of the plan;
- Checking the plan regularly and making the necessary changes.

The Australian Government Financial Literacy Foundation (2007) states that one of the main issues of money management is budgeting. The budget is aimed at keeping track of the financial situation and avoiding unnecessary expenditure. Budget is a plan that shows the estimation of spending to be made and revenues to be obtained over a certain period. In other words, it is a plan that shows how resources are to be

obtained and used in a given time period. Therefore, the knowledge and skills of budgeting are essential in the rational use of money. Also, it can be said that having money management knowledge is an inevitable part of being a conscious consumer.

Another important issue about money management is to guarantee the future and be prepared for unexpected vital events and risks. In this point, one of the important components of money management is to make insurance. Individuals' knowledge about insurance should be improved. Individuals are looking for a system that will secure their lives because of socio-economic situations, inflationary pressures, increase of occupational and physical risk factors and inadequate precautions to eliminate or reduce the impact of these risks, and changes in the world and national economies (Gokmen, 2012).

Insurance emerged from the need for people to protect themselves from social and economic risks of the events that can cause harm to people's lives because people face many risks. Disease, unemployment, unexpected accidents and deaths are some of these risks. People felt the need to take precautions against such situations. In essence, insurance is a technique used to secure the future. Reducing the risk and sharing the loss are among the benefits of insurance. Since the reduction of risks gives freedom to the individual in every field of future financial planning, the knowledge and correct practices in this regard are important in increasing financial welfare (Hayta, 2011).

2.3.4. Saving and Investment

Most individuals and families do not use all of their income in consumption expenditure and direct some of it into savings and investment. That is, in order to establish a better

standard of living in the future, they reduce their consumption today and thus, make some sacrifices (Usul *et al*., 2002).

Generally, in terms of economically, saving is defined attitude, money saving and investment (Lusardi and Mitchell, 2013). Savings are defined as the difference between income and consumption, entailing the postponement of the latter until a future date, which means that future consumption replaces current consumption (TRCB, 2014). According to Sarlak (2012), savings are the key factor to success in money management. The conventional economic approach to savings and consumption decisions assumes that a fully sensible and knowledgeable individual will spend less on his/her income during his/her high-earning time and save money to support consumption when income drops (e.g. after retirement) (Lusardi and Mitchell, 2013).

Savings are a fundamental element for investments and defined as the most important source among the sources that will finance the investments. Savers who transfer their savings to investment instruments, especially to the capital market, should know about the risk and return on investment, liquidity, and the effects of inflation. That is, necessary to comprehend and thus be able to consider the risk factors as well as the expected return on the investment to be made. The positive relationship between risk and return is one of the assumptions that form the theoretical basis of income management. As a general market rule, the higher the risk of an investment, the higher the expected return will be for that investment (Neveu, 1986).

Another important factor when investing is liquidity which refers to the level of ability to convert financial assets into cash. For example, if there is a high demand for the securities invested in the securities markets, that is, if the liquidity capability is high,

monetisation will be easier. At the same time, inflation is one of the factors that affect investment. Therefore, the return on investments in an inflationary environment must be well calculated. For instance, in an environment where inflation is high and constantly rising, the income of fixed income investors will be low or negative. However, investments made accurately and consciously in the financial system can provide additional returns for the individual. Therefore, the ability to select investment tools and financial products is an important feature of financial literacy (Capuana and Ramsay, 2011).

As investment tools, savings accounts, stocks, bonds, treasury bills and mutual funds can be used. Savings from one of the investment instruments are aimed at providing a regular and risk-free return. The money can be kept at the bank as a drawing account or saving account. Money can be deposited and withdrawn at any time withdrawing accounts. An interest rate applies to savings accounts and individuals gain interest income. Such investments have little risk, with the money being under the guarantee of the bank and the government. Whilst the interest paid by the bank into the savings account protects the value of the money against inflation, to some extent, the value of money cannot be preserved when the interest rate change falls behind the inflation, and the return on investment may even become negative against inflation (Hayta, 2011).

Stocks are one of the most important tools of the capital market. Valuable documents issued by organisations to increase their capital and become partners in the new organisation. Stocks are financial assets that give the investor the right to be a beneficiary of the company's profit and loss to represent the partnership. Investing in stocks is more risky than fixed income investments because the profit share that the

investor will receive differs from year to year, depending on the activities of the company. It is also necessary to consider stocks as a long-term investment tool because the stock of a good company may fluctuate in the short term and may pay low dividends in some periods. However, the company, which does not distribute its profit and turn it towards investment, may gain more value in the long run. For this reason, it is not advantageous to be preferred by investors who have the idea of turning stock investments into liquidity in the short term because buying and selling stock investments do not provide high returns (SPK, 2012).

Bonds are for businesses to provide long-term foreign resources. The bonds of governments or private institutions are floated on the market to borrow money. Businesses that issue bonds must pay the principal of the debt and interest during the period of the debt. Government bonds are one-year and longer-term debt securities issued by the Ministry of Finance for financing budget deficits, being generally risk-free and fully secure (SPK, 2012). Treasury bills have all the legal features of government bonds but are shorter than one year. The issue of treasury bills by the government eliminates the risk of non-payment and ensures a high degree of liquidity. As treasury bills are under government guarantee, they too do not bear any risk for investors (Parasiz, 2009).

Mutual funds manage portfolios consisting of stocks, bonds, private sector debt instruments as well as gold and other valuable metals, in exchange for the money they collect from the public. It is possible to minimize the risk due to the diversification of financial assets that can be included in the mutual fund portfolio. The characteristics of the investment instruments, their risk status, the potential to convert to liquidity, and the knowledge and ability of the investment instrument to compare the risk and return

will enable people to make the right financial choices and thus increase personal financial wellbeing (SPK, 2010). For this reason, it is one of the fundamental conditions of being financially literate.

2.3.5. Spending and Debt

Debt literacy is considered as being an important component of financial literacy. Debt or credit is the ready-to-use purchasing power based on the idea of payment in the future (Capuano and Ramsey, 2011). In other words, having debt means that it can be spent before income is obtained. The right thing for the individual is to borrow on the basis of solvency. Having the ability to make rational borrowing from financially literate consumers, reducing the amount of debt as much as possible, borrowing for real rational reasons, having a good credit history, paying the debt on time, minimising the cost of using credit and credit card, having attitude and behaviour expected. Delays in credit card payments and irresponsible purchases increase credit card cost, thereby exacerbating consumer debt.

Today, many consumers fall into a position of being unable to pay their debts. It is necessary to act rationally in the use of credit cards and this will only be possible by increasing the level of awareness of the negativity of being over dependent on their usage. In addition, individuals should also have knowledge about their rights and responsibilities regarding all the instruments they purchase from financial markets, as well as the processes of buying and using credit and credit cards. It is only possible for consumers to understand the disagreement resolution processes, to request compensation from a financial institution, and to perceive fraud and act against it wherever possible (Capuano and Ramsey, 2011).

2.4. Need for Financial Literacy

Financial literacy is crucial both for individuals and societies. Financial security of individuals is associated with the complexity of financial goods and services in financial markets. If individuals are not able to make good financial decisions due to this complexity, the market balance might begin to deteriorate, and hence, their financial wellbeing will be negatively affected (Mandel, 2006). Mandel's (2006) opinion is supported by Temizel and Bayram (2011). The demand for financial products and services depends on their acknowledgement and understanding by individuals, can be achieved through financial literacy. These opinions would seem to suggest that financial knowledge should be given individuals because it is the main element that underlying to improve financial literacy.

Nowadays financial literacy is an essential life skill for individuals, for a high level can prevent societies from suffering financial crises (Erner *et al*., 2016; Paiella, 2016; Potrich *et al*., 2015). This opinion is supported by Sarac (2014). According to Sarac (2014), vulnerable parts of the population can be protected via financial literacy from malicious practices, such as payments that cannot be met and mortgages default. Sarac (2014) has revealed the impact of credit products on financial wellbeing. One of the main causes of the global financial crisis of 2007/08 was the excessive use of credit products. The study would have been more interesting if it had focused on financial literacy level and credit usage.

Nowadays, many types of credit products have gained in importance across the world, such as fixed or variable interest loans and mortgage credit with higher risk. These kinds of credits have got an important role in both individuals' economic life and the political economy of countries. One of the reasons for the recent global financial crises

was individuals having a low level of financial knowledge, which led to their buying credit products that were unsuitable for their economic circumstances. This situation has demonstrated the importance of financial literacy in terms of market regulation and protection of the consumer (OECD, 2009). According to Alan Greenspan, who was president of FED, financial literacy is a tool that can provide sustainable economic growth.

Similarly, Mandela (2006) contended that financial literacy contributes to creating a more efficient market and competition practices of financial institutions. Financially well-educated individuals indirectly help to develop to markets through their good financial decisions. Hence, financial literacy is an essential factor for the efficiency of the financial market. Additionally, financial literacy contributes to an increase in individuals' financial wellbeing. Also, it provides social and economic integration besides that; it facilitates access to financial products and services through financial education and sufficient financial awareness (OECD, 2009).

Financial literacy provides different benefits to individuals of all ages and income levels such as young, elderly and low-income level. For instance, it helps young individuals to make a budget and control their savings. It also contributes to implementing an effective savings strategy that enables their children to pay tuition fees and provides the ability of individuals to purchase a new car or house. At the same time, financial literacy provides more financial wellbeing to individuals in their retirement time with more financial knowledge, capability, and personal savings. Additionally, low-income individuals are avoided from high commission fees and are provided saving by financial literacy. High-level financial literacy individuals make their payments on the time and the possibility of bankruptcy is lower than for their less well informed

counterparts (Temizel and Bayram, 2011). However, the study did not reveal how financial education programmes should prepare for different ages and income group individuals.

2.4.1. In Terms of Individuals/Households

According to Jorgensen (2007), financial literacy is a highly important factor for both individuals and households as it affects their life quality by enabling them to make good financial decisions. At the same time, relationships among households are positively affected through physical and psychological well-being. Jorgensen (2007) has revealed that individuals' psychology is influenced by financial literacy. Individuals should have the adequate financial knowledge and practice consistent saving to make good financial decisions. Similarly, Gokmen (2012) showed that saving behaviour should be taught to individuals, so they do not spend all their earnings. In addition, individuals should know that debt can never be paid with new debt.

In the same way, Temizel and Bayram (2011) indicated that the main condition for ensuring capital saving in society is individual awareness of saving. Recently, studies have focused more on improving individuals' financial awareness. The possibility of wrong financial investment decisions is minimized by financial knowledge and capabilities, which consist of financial literacy.

Individuals need a certain level of financial literacy to compare and evaluate financial products. When they have a shortage of financial knowledge, they cannot buy the necessary financial products or even purchase them even if they do not need them. Financial literacy contributes to individuals' financial well-being by providing better knowledge about financial goods and services. At the same time, it also increases their financial awareness and effective usage of financial products. Moreover, it

encourages individuals to use the most appropriate financial products for them, helping them avoid fraud and misleading financial products (Temizel and Bayram, 2011). A serious weakness of this argument, however, is that it ignores financial behaviour.

According to Capuano and Ramsey (2011), financial literacy provides high-quality living standards and more savings, especially in individuals' retirement time. Effectively, individuals can manage their financial situation with good debt management skills, the ability to use financial products, more financial confidence and appropriate choice for financial products. Additionally, individuals with financially literate people can reduce their future anxiety by creating a financial plan. Therefore, an adequate insurance contract, an appropriate retirement plan and regular savings should be made for a good financial situation in future (Schokey, 2002).

Studies (Gokmen, 2012; Martin, 2007) have revealed that low-educated and low-income individuals tend to make more financial mistakes compared to well-educated and high-income individuals. At the same time, psychological factors play an important role in their financial behaviours. Also, their culture affects their financial decisions. Additionally, financial education is useful for retirement planning, savings, buying a house and using credit. Thus, households are affected positively by financial education.

Hilgert *et al*. (2003) examined the relationship between financial knowledge and financial decisions, which found a significant correlation between the two. When individuals' financial knowledge increases, the possibility of making good financial decisions increases as well, even if such financial knowledge is gained by their family or friends.

2.4.2. In Terms of the Financial System and Economy

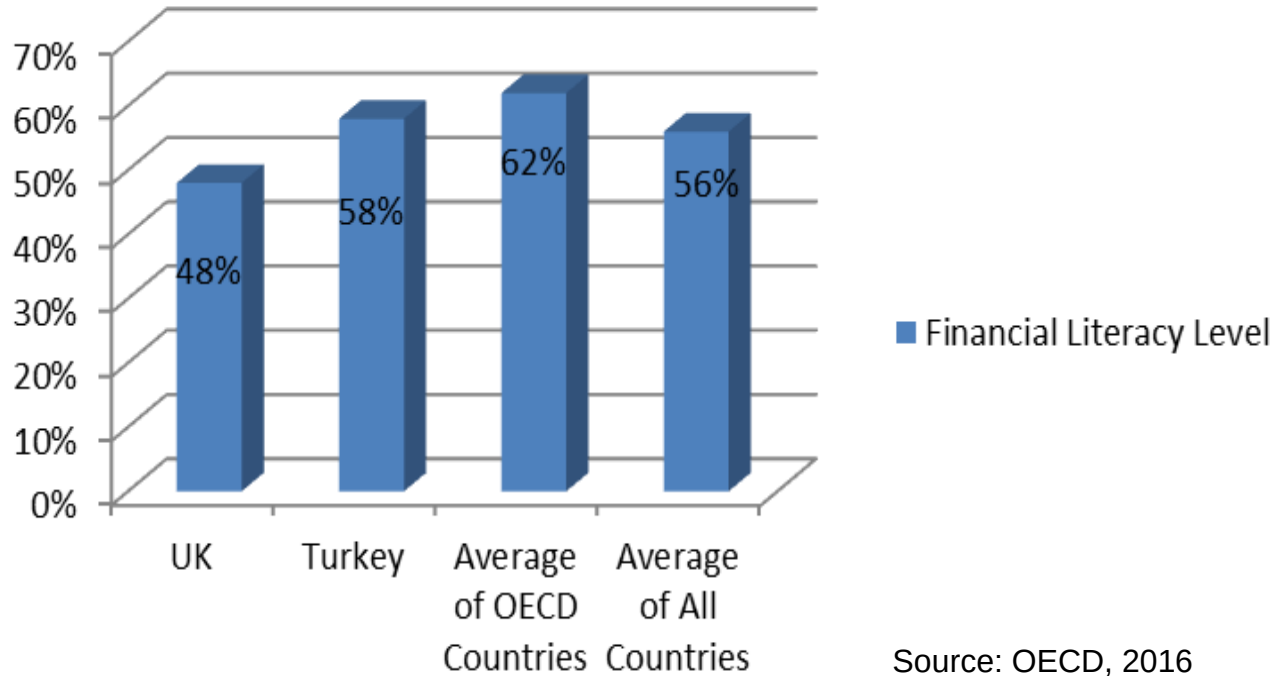
Financial literacy has a crucial role to play in terms of the financial system and economy. Individuals with a low level of financial literacy tend to make more inappropriate financial decisions; therefore, the financial system is influenced negatively. When economic growth starts to decline, the reel sector is affected negatively by an increase in the unemployment rate. The demand for financial products and services can be increased by financial literacy (World Bank, 2010).

Individuals can use resources more effectively and make more savings through financial literacy. Thus, economic growth occurs. At the same time, long-term funding, required for the economy, can be provided by individuals' paying into the pension system. Consequently, the resource cost of financial institutions decreases through savings and deposits (Gokmen, 2012).

All in all, individuals should learn to prepare a budget in order to make a saving. Individuals avoid unnecessary spending with budgeting, and they start to save. According to Koksal and Osmanoglu (2013), saving does not mean only accumulating money; it also needs to be transferred for investments. Unless individuals who have savings transfer their funding to the financial system, they cannot contribute to providing an accumulation of capital. Funds are required to be integrated into the financial system by intermediaries for the financing of investments. Funds are transferred to investments if a deposit bank account is opened or company shares are purchased (Koksal and Osmanoglu, 2013).

2.5. Financial Literacy Problem of the UK

OECD (2016) has highlighted that the UK has one of the lowest levels of financial literacy at around 48%. Figure 1 shows that the average financial literacy level of all countries is 56%, while the financial literacy level of OECD countries is 62% in 2016.



Source: OECD, 2016

Figure 1: International Survey of Adult Financial Competencies

According to UCL (2018), the financial literacy level of the UK is very low when compared to other developed countries. In the UK, 40% of adults are not able to apply a simple discount to products correctly. The majority of adults are struggling to complete quite basic financial tasks. At the same time, financial graphs are not accurately understood by more than 50% of adults in the UK, even if they contain only basic financial information. The study indicates that the financial literacy level of young adults aged 16–24 in the UK is significantly low.

The Financial Times (2018) emphasised that the financial literacy problem of the UK is increasing. Notably, basic financial terms such as inflation, mortgage, and interest rates are not understood by young adults. For instance, the effects of inflation and compounded interest on their savings and evaluation of mortgages are not known by them. Additionally, they do not have savings for any emergency circumstances because individuals are trying to meet their current needs. Another important point has highlighted young individuals not making a retirement plan, although life expectancy has increased.

Financial wellbeing and the UK economy are being affected by the low level of financial literacy. Personal debt reached its highest level, from £1.53 trillion in 2017 to £1.58 trillion in 2018. Also, although individuals' debt is £1.14, the earnings of individuals are only £1.00. Plus, average savings were 5.3% in 2017, but 5.4% in 2016. However, the UK economy grew 0.1% less than predicted in December 2017 (The Money Charity, 2018). The UK is paying the price of a low level of financial literacy (Guardian, 2017).

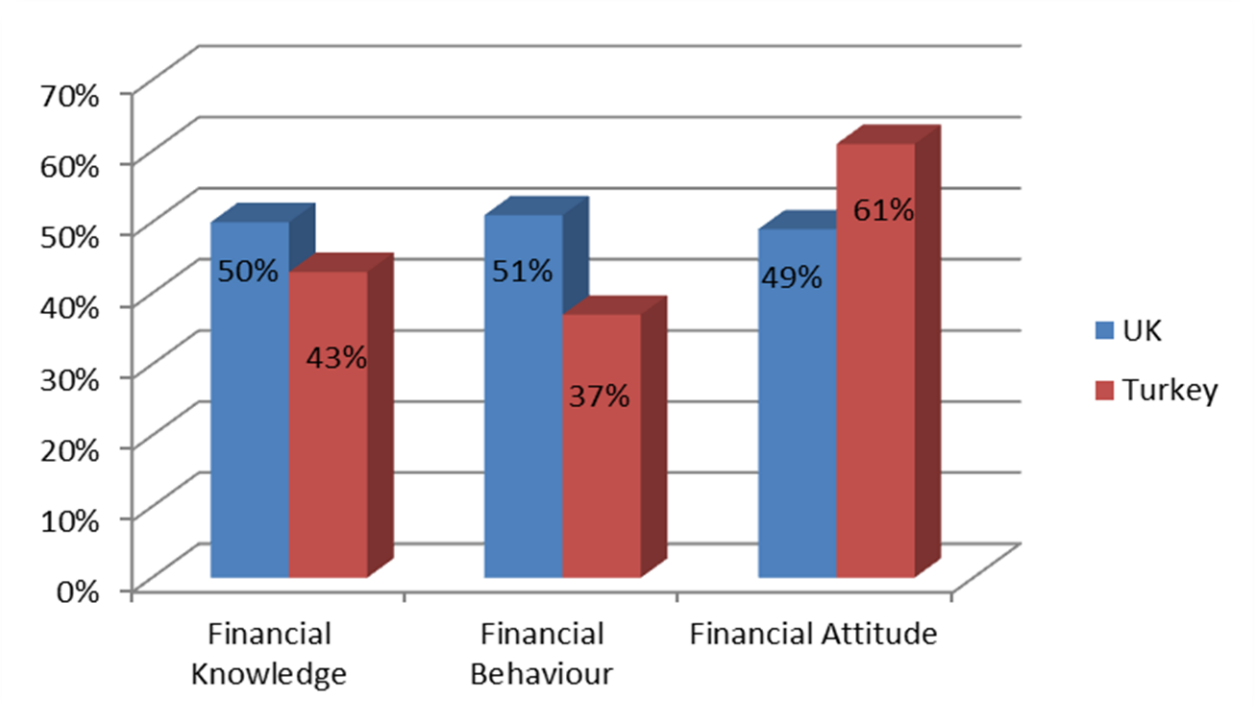
2.6. Financial Literacy Problem of Turkey

Nowadays, the financial literacy problem has become an important issue, although financial literacy studies have only recently started in Turkey. 70% of individuals have more or less knowledge about financial issues. However, only 40% of individuals had savings due to uncertainty, concern, and anxiety about the future in Turkey (KPMG, 2018).

Turkey had confronted high inflation rates and interest rates for a long time, with significant fluctuations occurring in interest rates, inflation rates, the economic growth rate, and other alternative investment instruments. Naturally, individuals who lived

through this long time of uncertainty preferred less risky investment instruments such as gold, foreign currency and short-term deposits, as they were focused on the short-term. As a result, middle-aged and older individuals' investment habits were shaped by this negative environment (Yardimcioglu and Yoruk, 2016).

Turkey Economy Bank has been preparing the financial literacy and access index in collaboration with Bogazici University since 2013. Their study (2017) highlighted that the financial literacy level of Turkey is increasing year by year. Also, there is a significant correlation between financial literacy levels and income. Students, unemployed individuals, and housewives have got the lowest financial literacy levels in Turkey. According to this research (Figure 2), financial knowledge and financial behaviour in the UK are higher than in Turkey. The financial attitude of individuals in Turkey is higher than in the UK.



Source: Turkey Economy Bank, 2017

Figure 2: Financial Knowledge, Financial Behaviour and Financial Attitude Level of the UK and Turkey

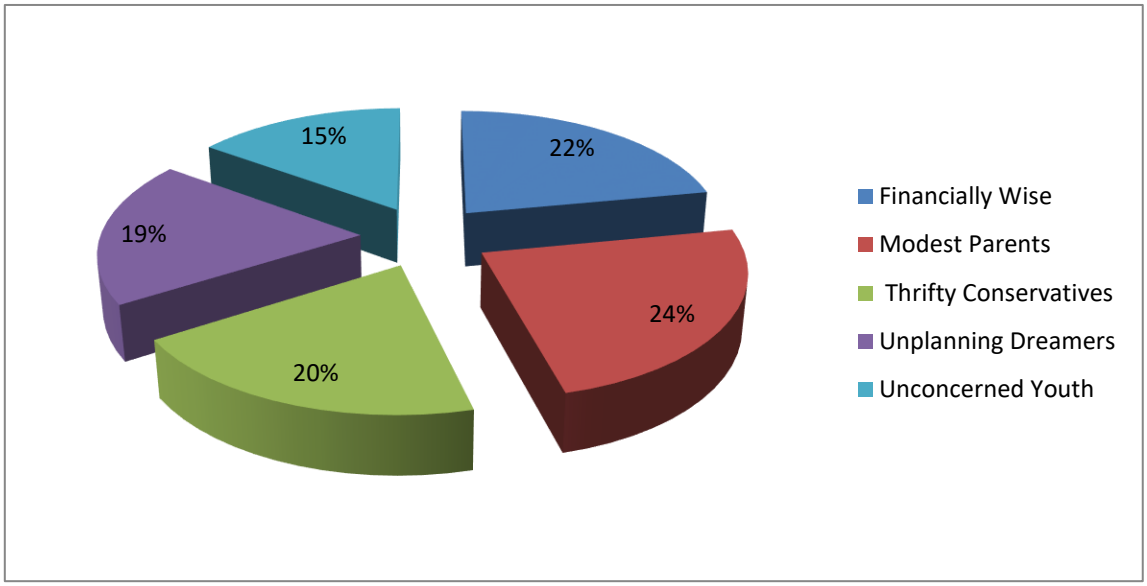
According to Milliyet (2017), individuals in Turkey are categorised as Financially Wise, thrifty conservatives, unconcerned youth, modest parents and unplanning dreamers. Figure 3 shows the percentages of these main groups in Turkey.

Modest parents consist of 24% of individuals and are mostly between middle to upper age. The group spends their money depending on their needs, and try to make long-term plans for the future and retirement. Payments are made on time and borrowing is not preferred. They do not like to take a risk, but a high income is desired. For this group, the livelihood of a household is the most important principle.

The Financially Wise group consists of middle-aged individuals and is 22% of society. They manage their money wisely. They have a higher household income than other groups, and most of them own their own business. They save and spend consciously. This group sets financial targets and evaluates its savings in different areas to achieve these goals. The Financially Wise generally use a budget and make payments on time. Thrifty Conservatives, which consists of 20% of individuals, use their money prudently. Although their financial situation may be challenging, they try to make long-term plans and savings for their future and children. They can spend on their primary needs, but they do not have the flexibility to buy unnecessary things. However, they do not prefer to invest in financial instruments, which contain interest.

Unplanning Dreamers and Unconcerned Youth consist of the ages 18–24 group. Unplanning Dreamers are not yet married and do not have children. They have a limited income and constitute 19% of individuals. They are ready to take risks in order to gain more wealth in the future. However, they do not have discipline or plans for their money. They avoid making a long-term plan and do not tend to save.

Unconcerned Youth comprises 15% of individuals. This group has the lowest financial literacy level. They do not have a regular income and do not tend to save or budget. Moreover, they would not save even if they had a regular income.



Source: Milliyet, 2017

Figure 3: Percentages of Five Main Groups of Turkey

To sum up, both of the countries UK and Turkey, have financial literacy issue. A low level of financial literacy decreases the financial well-being of individuals (Lusardi and Mitchell, 2014). In connection with this, young adults in these two countries may face financial distress in the future. Therefore, the low level of financial literacy issue should be solved both for the UK and Turkey. In the literature, there is not sufficient research that helps them to solve this issue. Thus, this research will fill the gap in the literature by identifying their current financial literacy level and explaining factors for the UK and Turkey that help them to increase their financial literacy.

2.7. The Importance of Financial Education

Financial education refers to a process in which individuals develop their knowledge of financial products and concepts, increase their awareness of financial risks and opportunities, make informed decisions, perform effective activities to increase their financial wellbeing and learn where to go when they need help (OECD, 2013). Increasing financial literacy depends on individuals' financial education. Individuals do not increase their financial literacy level without financial education (Gokmen, 2012). The main weakness of this argument is that financial literacy will only be obtained through financial education. In contrast, Hilgert (2003) has highlighted that family and friends have played an important role in obtaining financial literacy. In short, financial education should be given to individuals to improve their financial literacy, but the effect of family and friends should also be considered.

In recent times, the importance of financial education has increased as a result of the development of financial markets, the changes in politics, economics, and demographic factors. Financial markets are becoming more complicated when new financial products are launched. Therefore, financial education should be provided to individuals to prevent financial distress in the future (OECD, 2005).

Financial knowledge is the main component of financial literacy. Individuals' financial knowledge would be increased via financial education (Xiao and Porto, 2017). For instance, no matter how informed investors are about investment decisions, if they do not read or understand the explanations, the planned effects will never occur. Likewise, financial education not only covers necessary financial knowledge, but it also teaches the individual how to use the knowledge.

One of the aims of financial education is to educate low-income or low saving individuals as these groups are more likely to make irrational financial decisions (Gokmen, 2012; Martin, 2007). Other aims of financial education are to teach individuals how to manage money, make medium and long-term financial plans, understand risk and return, recognise financial instruments, use financial instruments effectively and efficiently, and where and how to gain correct information about financial goods and services (Hayta, 2011).

The content and effectiveness of financial education show differences regarding individuals' characteristics who have had the education. Individuals should be split into adult, children and working-age groups before financial education is provided. Complex financial terms should be simplified, cultural differences should be considered, and financial education programmes should be prepared based on the individuals' knowledge to create successful financial education programmes (Miller *et al*., 2009). Additionally, individuals should be informed about earning income, purchasing financial goods and services, saving, using credit, making an investment, preventing risk and buying insurance (Bosshardt and Walstad, 2014).

According to Miller *et al*. (2009), financial education covers lots of subjects to create more powerful individuals and provide the capability of analytical skills. Saving, financial planning, debt and credit management, banking services and investments are priority topics of financial education (Nelson and Wambungu, 2008).

Individuals with financial consciousness, make good financial decisions such as saving, spending, and investment (Alkaya and Yagli, 2015). Policymakers try to provide financial education to individuals. When knowledge about personal loans, mortgages, savings, budgeting plans, retirement plans, and understanding and

interpreting financial data are provided, financial literacy levels increase effectively. The important point is that individuals' financial literacy level should be measured before making any financial education programme to create more effective financial education. Otherwise, there would be serious problems in financial systems.

Low levels of financial literacy create a serious problem in the financial system for both developed and emerging economies. For instance, after the 2008 global financial crisis, the majority of individuals in the USA who received mortgage loans were ignorant of the fact that if interest rates increased, their payment would go up as well (Economist, 2008). Another important issue revealed by OECD (2009) was that the majority of young adults rely on their sufficient financial knowledge, although they have a low level of financial literacy.

After the 2008 global financial crisis, financial education has started to be given to individuals and young adults. The aim of this education is to create conscious individuals. Thus, the financial wellbeing of individuals can be increased by investment, even if the financial system is complex, and individuals' future risks can be minimised thanks to increasing financial capabilities (Eker, 2017).

Individuals who have financial education are crucial for both emerging and developed economies. They play an important role effectively on decreasing poverty and developing financial and reel sector for emerging economies. In developed economies, individuals might have sufficient income for their retirement and may avoid debt, which could lead to bankruptcy and foreclosure (OECD, 2006).

According to Xu and Zia (2012), the aim of financial education programmes for individuals is to influence individuals' behaviours with regards to financial planning,

saving, increasing financial knowledge and recognition of financial products. Especially in developed countries, financial education programmes emphasise the importance of saving and developing the financial literacy of young individuals.

In the short term, financial education provides a way to increase the financial wellness of individuals, the expansion of investor bases, prepares qualified labour forces for the financial sector, grows financial markets and works more effectively. However, in the middle and long term, it provides economies with increased stability and increases social welfare (TRCB, 2014).

According to Kiyosaki (2011), one of the primary reasons the middle classes struggle with debt, the poor get poorer, and the rich get richer, is that financial knowledge is taught at home instead of school. Generally, schools are focused on professional skills and scholastic, rather than financial skills. The majority of individuals gain their financial knowledge from their parents. At this point, what kind of financial knowledge is given to a child if their parents are poor? The parents are more likely to say that you should study hard in school. Therefore, they may graduate with excellent grades, but with a lack of financial knowledge. This explains how accountants, lawyers, doctors, and bankers who graduated with excellent grades can struggle all of their lives financially. In relation to this, a huge amount of national debt is caused by highly educated politicians' financial decisions with a little, or lack, of knowledge in the subject of money.

2.8. Behavioural Dimension of Financial Literacy

In order to be financially literate, it is necessary to have the knowledge and skills to make the choices needed in financial markets where all consumers are in contact,

regardless of their characteristics (Huston, 2010). Although having correct financial knowledge creates the basis of financial literacy, the knowledge must be implemented correctly in the demand and use of financial products and financial services. In other words, the correct financial behaviour must be exhibited.

Financial literacy expresses elements such as the behaviours of human capital that can be used in financial activities to increase the time benefit expected from consumption. Behaviours and cognitive biases, self-control problems, other factors such as family, friends, economy, and society can affect financial behaviour and financial wellbeing. Having financial literacy skills and behavioural patterns is essential for both avoiding and solving financial problems (Australian Securities and Investment Commission, 2011).

Financial knowledge refers to the consumer's competence in financial issues. In this regard, the level of the consumer's knowledge of financial literacy is an important part of competence (Capuano and Ramsay, 2011). Individual financial knowledge is a general concept in understanding money and its use, and this includes the ability to manage revenue and expenses and to use general methods to manage and change money, such as cheques and credit cards. It also ensures the understanding of everyday situations that should be known, such as understanding insurance, credit, savings and borrowing. In this respect, it is necessary to have the ability to use financial knowledge to make correct financial decisions. This skill refers to the basic skill required to make complex financial and investment decisions that benefit the individual (Wagland and Taylor, 2009).

Financial behaviour is generally thought to depend on rationality. In financial literacy researches, it is stated that financial understanding and financial knowledge lead to

optimal consumer decisions, while a lack of financial knowledge and financial understanding leads to inadequate consumer decisions (Capuano and Ramsey, 2011). Although financial success is thought to be related to numerical and mathematical skills, it is also accepted that optimal behaviours related to financial literacy depend on innate and natural ability, knowledge and skill in this field. Additionally, social factors also strongly influence behaviour. Socio-demographic factors, social position, and welfare and income status determining access to social networks are also important factors. In addition, the complexity of the market and financial products, culture and short-term consumerism affect financial behaviour and cause many behavioural changes that are considered the result of financial literacy (Capuano and Ramsey, 2011).

Financial behaviour includes behaviours that include unconscious habits, intuition, and effective money management. It may be a reflection of financial knowledge-seeking, financial planning, setting goals and decisions made without thinking. Making financial decisions is the last step between desired output and expectation. Personal attitudes and beliefs, non-cognitive skills and personal characteristics affect financial behaviour and mediate the link between financial information and financial behaviour (The Consumer Financial Protection Bureau, 2015).

Many people do not have a sufficient level of knowledge, behaviour and skills in the financial field. They are unable to control their spending, avoid financial risks, and cannot see the financial results of events such as unemployment, divorce, illness and accidents. Money, which is increasingly integrated into daily life and financial markets, has become more complex, and this has brought difficulties in managing the household financial situation. In addition to these problems, excessive borrowing has

begun to manifest itself as a real threat and reveals the necessity of correct financial behaviour (European Banking Federation, 2015).

Financial knowledge, skills and behaviour should be addressed in a comprehensive conceptualisation of financial literacy, as well as their interrelationships. Financial knowledge, in particular, represents a basic form of financial literacy. Financial knowledge is reflected as it is perceived and affects knowledge-based financial skills. Current financial behaviour is based on current knowledge, perceived knowledge and skills. Experience gained through financial behaviour ultimately affects both existing and perceived financial knowledge (Hung *et al*., 2009). Individuals who are knowledgeable in financial issues can make better decisions for their families and therefore, can take a better position economically by increasing their wellbeing. Individuals and families who can make financially safe and correct decisions have an accelerating effect on the economic development of society as a whole (Hilgert *et al.*, 2003).

In general, the financial behaviours of individuals include behaviours related to budgeting, using credit, money management, savings and investments. While positive financial behaviours are indicated in the form of budgeting, regular savings and using credit cards with responsibility, negative financial behaviours include exceeding the credit card limit, paying the credit card late and not paying the entire amount of credit card debt every month (Gutter *et al*., 2010). The most basic financial practice carried out by the individual or household is to pay the bills on time. From this point of view, financial education providers recommend that individuals keep a written budget and regularly spend by comparing their current and planned expenditures (Hogarth *et al*., 2003).

High-income level individuals are more responsible than other income level individuals in terms of financial behaviour. Individuals cannot fully benefit from financial knowledge and financial resources unless they feel that they control their financial situation. Although knowledge and income are important in financial matters, individuals who think that financial outcomes arise by chance, or as a result of other individuals' orientation, are less concerned with their financial management (Perry and Morris, 2005). There is a general tendency to think that financial education can have a positive effect on financial behaviour. However, Mandell and Klein (2009) stated that these individuals do not see themselves as more pro-saving than those who are not trained in this field.

Financial knowledge and financial control have an important role in explaining financial behaviour, and financial knowledge has a positive relationship with financial behaviour. Failure to achieve financial control is in a negative relationship with financial behaviour (Mien and Thao, 2015). Students who have a basic level of financial management and credit card usage knowledge, using credit cards effectively, tend to use fewer credit cards and exhibit less risky financial behaviour (Borden *et al*., 2007).

According to Ergun (2017), financial literacy and financial behaviour have a significant impact on excessive borrowing. They also stated that high-income owners are less likely to over-borrow, and they exhibit rational behaviour in the use of credit cards. They also found that low-income families are more likely to be over-indebted and that financial literacy is an important indicator in terms of over-indebtedness.

Since gaining access to credit is much easier for financial consumers, excessive borrowing has become a common problem that jeopardises the lives of financial consumers. At the same time, it exhibits different behaviours on the borrowing

behaviour of consumers with different financial literacy levels. For example, individuals with high financial literacy have lower borrowing tendencies (Sevim *et al*., 2012). In this context, debt literacy refers to the ability to make simple decisions on debt contracts, applying basic knowledge of interest to daily financial preferences, and is an important part of financial literacy (Lusardi and Tufano, 2008). According to Lusardi and Tufano (2008), debt literacy is low, especially in women, the elderly, minorities and divorced people. However, Lusardi and Scheresberg (2013) concluded that the financial literacy level had an important role in many individuals' high-cost borrowing methods, using the 2009 American National Financial Adequacy Study. Financial literacy has an impact not only on the assets of individuals and households but also on borrowing behaviours (Lusardi, 2013).

According to Japelli and Padula's (2013) study, low levels of financial literacy are associated with low levels of risk diversification, inadequate portfolio investment, and low wealth accumulation. Also, individuals have little knowledge of finance, basic economics concepts, risk diversification, inflation and interest. Financial literacy has a significant impact on welfare and portfolio decisions. Financial literacy and welfare are in a positive relationship with each other in the life cycle. Reforms in the financial markets also enable high financial literacy and high savings and welfare levels in the long term (Japelli and Padula, 2013).

The Consumer Behaviour Theory states that each consumer tries to maximise the lifelong expected function due to a budget constraint. According to this model, lifetime resources, distribution of these resources, and age play a critical role in saving decisions. Preferences also have a significant impact on savings. Those who attach high value to their current lives will tend to spend more. Nevertheless, decisions on

savings require knowledge of interest rates and fluctuations in inflation. Moreover, it is a necessity that those who decide on investment make calculations on compound interest and the time value of money. In this framework, there is an important link between financial literacy and savings (Prusty, 2011).

Understanding the importance of planning and saving is of great importance in today's economy. Demographic factors have a significant effect on the factors that determine financial literacy and saving behaviour. Hilgert *et al*. (2003) also show that gender is as important as the main factors. They discovered that women have a lower level of financial literacy than men. However, studies have shown that the level of financial literacy increases with age, and education and high-income level also have positive effects on financial literacy (Lusardi and Mitchell, 2013; Ergun, 2018). Financial literacy has a strong relationship with financial behaviours, such as having a bank account, and there is a positive relationship between savings behaviour and financial literacy. A high level of financial literacy has a positive effect on long-term savings behaviour and positively affects long-term investment and savings behaviour (Hilgert *et al*., 2003).

Awareness of financial literacy is closely related to financial behaviour. Those with sufficient financial knowledge have a higher tendency towards retirement savings. There is an important link between individual characteristics and savings. Having goals and motivation for saving creates positive effects on saving increases. However, a pessimistic attitude towards saving affects behaviour negatively (Robb and Woodyard, 2011). Also, knowledge about finance and planning are closely related to saving behaviour and regular saving decisions (Eker, 2017). Eker (2018) indicated that the financial literacy levels of the elderly, women, and those with low education levels, are

low. He also concluded that individuals with high levels of financial literacy tend to use more than one savings tool and that they tend to invest in retirement funds, and financial literacy is positively associated with financial behaviours.

Savings have consequences that benefit the whole of society. Therefore, economic growth and capacity start to increase. In this framework, individuals should be encouraged to increase savings at the national level. Achieving success with such an incentive can only be achieved as a result of increasing the financial literacy of individuals through financial education studies (Aksoylu *et al*., 2017). It is known that individuals with little financial knowledge and some missing knowledge about the market tend to borrow more than save. These people exhibit more negative behaviours compared to those who have financial proficiency in terms of financial decisions, portfolio selection and investment in welfare (Abreu, 2014).

It is a behaviour pattern that can be realised with the understanding of basic financial concepts, where individuals choose to save for their later years. Such a decision has become increasingly important, as it will affect the quality of life for individuals to come. Despite these efforts to save, social safety networks cause individuals to save very little for retirement. Benefits provided to people in social security systems create burdens for public finances, and problems arise regarding their sustainability for years to come (Brockman and Michayluk, 2015). Nevertheless, a high level of financial literacy enables individuals to invest more. Widespread financial literacy allows low-income households to make better financial decisions, thus enabling wider social and economic rights and increased capital stock with increased savings (Robb and Woodyard, 2011).

Individual investment decisions refer to processes that vary from person to person. While some individuals make decisions based on their own biases, others consider many factors when making an investment decision. Investment decisions made as a result of incorrect financial evaluations can lead to negative consequences. In this respect, financial literacy provides the necessary knowledge for the evaluation phase and makes appropriate decisions in terms of investment. This framework paves the way for successful savings and investments by being financial literate. However, before investing in this framework, the correct evaluation of factors such as credit and debt requires access to the correct information and the skills to evaluate them (Financial Literacy Foundation, 2007). In this context, financial literacy helps individuals gain the ability to make an accurate assessment of individual finance and manage financial issues correctly. Those with low financial literacy invest more in traditional and secure financial products and do not like risky but high-return financial products (Bhushan, 2014). Without sufficient financial literacy, individuals face more borrowing and less saving. The recent mortgage crisis in the United States has revealed how important the need is to make accurate financial decisions on borrowing (Alexander *et al*., 2011).

Many empirical studies reveal that inadequate financial literacy is associated with inadequate risk diversification, inadequate portfolio investment, and low wealth accumulation (Alexander *et al*., 2011; Robb and Woodyard, 2011; Jappelli and Padula, 2012; Bhushan, 2014). Mathematical skills acquired at an early age increase household financial literacy, saving and prosperity in the following years (Jappelli and Padula, 2012). Quick and direct access to financial information makes individuals more informed about financial matters. Online investors especially are more

successful in their investments since they can reach incorrect and speculative information in financial matters more easily and quickly (Volpe *et al*., 2002).

2.9. Behavioural Biases

Traditional finance is based on a normative approach, which means that traditional finance provides the solution to how the individual should behave towards financial events. As a result of this, it does not focus on the behaviour of the individual and the results of this behaviour. Unlike traditional finance, behavioural finance examines how individuals behave in financial events. Therefore, behavioural finance is based on a descriptive approach (Baker and Nofsinger, 2002). It can be said that traditional finance is based on financial events, while behavioural finance is based on the behaviour of the individuals.

Behavioural finance is defined as the application of psychology to finance science (Shefrin, 2002). Another similar definition was made by Nofsinger, (2004), who examines how psychology affects financial decisions, financial markets, and companies. According to Barberis and Thaler (2003), behavioural finance takes the approach that some financial events can be better understood by using models where individuals are not completely rational. These common definitions show that psychology has played a crucial role in individuals' financial decisions.

According to psychology research, most decision-making behaviours are known as biases. All types of decision-making, especially related to money and investing, may be affected by bias. Generally, biases are the processing of information to make a decision and are the preferences of individuals. Biases may result in unhelpful, or even hurtful, decisions to be made in investments. All types of investors, both private and

professional, can be affected by their biases due to a fundamental part of human nature (Shefrin, 2002).

Behavioural biases are classified by Pompian (2011) as cognitive and emotional biases. Cognitive biases are based on incorrect cognitive judgements, while emotional biases are focused on judgements affected by sense and feelings. Correction of emotional bias is harder than correction of cognitive bias because emotional biases arise from impulses and intuitions. Cognitive biases arise from errors in processing information or memory errors.

2.9.1. Over-optimistic – Illusion of Control – Illusion of Knowledge

Over-optimistic bias is defined as the probability of a positive outcome seen as a high, unlike the probability of a negative outcome, seen as a low (Puri and Robinson, 2007). Most individuals are often affected by over-optimistic bias. According to Kahneman and Riepe (1998), the probabilities of poor results are predicted as low due to optimistic individuals. This finding is similar to Puri and Robinson's research (2007). The findings might have been more useful if the researchers had adopted the individuals' cultural or socio-demographic factors.

Pompian's research (2006) has revealed that individuals prefer to mainly invest in the companies that they work with or the companies operating in their geographical area, due to over-optimism. They might behave as over-optimistic for companies which are, or have been, in their own geographic region. Also, over-optimistic investors focus more on promising companies while they are examining annual reports or reading companies' financial analyses. Basically, Pompian (2006) has filled the gap in the literature by finding reasons for over-optimistic bias.

According to Kahneman and Riepe (1998), over-optimistic individuals tend to exhibit the illusion of control bias. The illusion of control is a situation that individuals believe have implications for the results of uncontrolled events (Montier, 2007). This definition is supported by Pompian (2011). Control illusion is the tendency of the individual to think that although they are not able to control the results of events, they believe that they can control, or at least affect, the results. As a result of this situation, individuals cannot distinguish chance-related events from talent-related events. Therefore, individuals think that all kind of events can be controlled. However, Langer's research (1975) has shown that control of events depends on factors such as the existence of competition, management of preferences, familiarity with the event in question and active/passive participation. For instance, although the lottery is entirely dependent on luck, it has been observed that the person's perception of the chance of winning or losing depends on whether they choose the ticket themselves, or are given it by someone else. Individuals who have a chance to choose a lottery ticket have felt as if they had control over the lottery result. This research might have been more useful if they had examined the reduction of the effect of the illusion of control.

Gina *et al*. (2011) have investigated how the illusion of control bias can be kept under control. The result of this research shows that individuals tend to overestimate the result of events controlled by them. There is also a negative correlation between actual and estimated control. Individuals overestimate their control in cases of low or zero actual control level. Individuals underestimate their control when actual control is high.

The illusion of knowledge, another factor to cause over-optimistic bias, has been examined by Montier (2007). According to Montier (2007), the illusion of knowledge is the tendency of the individuals to believe that the accuracy of their estimation can be

increased by gaining more knowledge. In order to gain increased financial wellbeing, individuals generally think that they need to know more than anyone else. However, research in the field of psychology suggests that if human capacity is cognitive, this limits the processing of information. In fact, individuals take the same decision regardless of the amount of information they have. Any information that individuals have acquired beyond the knowledge needed to make a decision reinforces their sense of trust rather than increasing their accuracy.

2.9.2. Over Confidence

In its purest form, overconfidence is defined as the unconditional trust in an individuals' reasoning, judgement and cognitive abilities (Pompian, 2011). Psychologists have found that overconfidence causes the exaggeration of individuals' ability to control their knowledge and events. Therefore, they can underestimate risks (Nofsinger, 2004). Generally, individuals are affected by overconfidence due to the illusion of control and the illusion of knowledge.

When the definition of overconfidence is evaluated in the context of investors, investors' attitudes towards risk are affected by overconfidence. According to Nofsinger (2004), generally, investors make more risky investments under the effects of overconfidence. Thus, this type of investor tends to take more risk due to the low level of diversity in investment. Basically, a rational individual only invests when the expected return is higher than the transaction cost. An overly confident individual will invest even if the actual expected return is negative because they exaggerate the accuracy of the information and the expected return (Barber and Odean, 2001). A large brokerage house with more than 35,000 households was investigated by Barber and Odean (2001) to understand the level of overconfidence among men and women,

and the reflection of this situation on expected returns. They found that men have more confidence than women, and men invest 45% more than women. As a result of their investment transaction, women gain more earnings than men.

Another interesting piece of research has been carried out by Jlassi *et al*. (2014). The effect of individuals' overconfidence on global financial markets between 2000–2012 has been investigated in 27 countries. The result of the research shows that generally, individuals take financial decisions over the short-term, and their decisions are often affected by psychological factors. Hence, excessive and asymmetric volatility in global markets can be explained by overconfidence. In particular, the effect of overconfidence came into prominence during the financial crisis. It can clearly be said that the overconfidence bias causes a market disturbance under different market conditions.

2.9.3. Self-Attribution

Self-attribution bias is the tendency of individuals to think that their successes depend on innate implications such as talent and intuition, while failures depend on external effects such as bad luck. For instance, students who are successful in an exam think that this success depends on their intelligence and work ethic. However, those who are unsuccessful in the exam claim that there is unjust grading (Pompian, 2011). This situation is supported by Hoffmann and Post (2014) and is referred to as the tendency to think that success depends on personal skill, while failure is due to factors which are out of their control.

According to Montier (2007), there are significant results relating to self-attribution bias. It is one of the main factors that can influence the decisions of investors and limit

their learning. Thus, this bias obstructs errors from being accepted as a mistake, and we should take lessons from these errors (Montier, 2007).

Gervais and Odean (2001) have developed a multi-term market model that defines how investors learn their capabilities and how bias in this learning process can create over-confident investors. In the multi-period economy represented by the model, only one risky financial asset is traded between three market participants – an informed investor, a liquidity trader, and a market organiser. This risky asset distributes the dividends at the end of the specific period. At the beginning of the period, none of the market participants knows the number of dividends to be distributed. The investor, who successfully predicts the profit share of the next period, believes that their success is due to their superior talent. This situation shows that the investor ultimately behaves under the effects of self-attribution bias. In other words, in the model, investors do not know their abilities at the beginning and learn their abilities as a result of their success and failures. When individuals assess their ability, they exhibit overconfidence in their successful decisions. Thus, they begin to show overly self-attributed bias.

Hoffmann and Post (2014) found a similar result to the Gervais and Odean (2001) study. The main purpose of this study was to show to what extent good returns affect individuals' beliefs on their skills. As a result of this research, when individuals get higher returns, compared to the previous period, they think that this situation arises due to their investment skills.

2.9.4. Confirmation

Confirmation bias is a type of selectivity in perception. It reduces the value of ideas which contradict with our beliefs while focusing on ideas which are supported by our beliefs. For instance, after an individual has purchased a television, the tendency is to

look for the same television in another, higher-priced, store to confirm that they have made a good purchase (Pompian, 2011). When people develop strong hypotheses, they do not show any interest in new knowledge which supports or contradicts their hypotheses. This can be illustrated briefly as when individuals believe that their investment strategy is more profitable than others, they might ignore evidence that this strategy is wrong. Besides, individuals tend to ignore the evidence. They may even mistakenly consider the evidence as supporting their initial hypotheses. This can be seen in the research of Rabin (2002). If a teacher believes that a student is more intelligent than others, the teacher will tend to confirm their hypothesis when the students' performances are compared in the future.

In summary, it has been shown that investors tend to stay away from any knowledge which contradicts their opinions and findings. They also believe the knowledge which supports their current opinions. This situation may result in the increasing importance of evidence supporting investors' opinions. However, they may ignore evidence that contradicts with their views. According to Rappaport and Mauboussin (2001), in order to avoid confirmation bias, it would be useful to make enquires into the most valued and definite information and opinions before making any financial decisions.

2.9.5. Hindsight

Hindsight bias is the tendency to believe that an individual initially predicted the outcome of the event with the advantage of acquired knowledge and experience following a similar event (Pompian, 2011). According to Pompian (2011), there is a significant relationship between individuals' knowledge and their judgements in that individuals' judgements are affected by their knowledge.

Besides Pompian, the relationship between judgement and having knowledge has also been investigated by Fischoff (2003). In Fischoff's research, students were divided into five groups. Each group read a text describing the war between the British and the Gurkha people in Nepal. Four possible outcomes were listed regarding this war. Fischoff asked the first group of students to predict the likelihood of the occurrence of these four possible outcomes. However, one of these four possible outcomes was added to the end of the text as the real result of the war for all groups, except this one. The four groups of students predicted the likelihood of occurrence of four possible outcomes, regardless of the results given at the end of the text. The result of the study has shown that students who knew the result had not been able to ignore this known information. These groups assigned higher possibilities of the true result of the war for the given situations when compared the first group of the students, who had no result information. When declaring that a situation has occurred, it increases the likelihood of the output being perceived. One major drawback of this research is that educated individuals were selected. The results might be relevant to the individuals' education level.

Bukszar and Connolly (1988) conducted a study to test whether education in strategic decision-making decreases the hindsight bias. A commercial case of a pharmaceutical company was given to the participants to examine and, two days later, a two-page analysis of the case was required. Three different versions of the case were prepared and distributed randomly to three groups of students before the research began. The participants were asked to analyse the potential successfulness or unsuccessfulness of the project without giving them any information about the result of the investment project in the first group. In the first version, if the project achieved a 20% return on investment in the first two years, the project will be accepted as successful. In the

other two versions, it was stated that the projects were fully implemented and that the first one had a 36% return on investment and the second had a 4% return on investment in the first year. The result of the study showed that the participants could not ignore the given information about the result. The group, which knew the real investment profitability of the project as 36%, estimated a higher probability of success and profitability when compared to the group that knew it was 4%. Those who gave positive results for the investment project found the investment decision to be less risky and more attractive than the ones with negative results. The findings have shown that educated individuals in strategic decision-making tend to have hindsight bias.

However, Kahneman and Riepe (1998) stated that hindsight bias is dangerous in two aspects. Firstly, hindsight bias can lead to a sense of overconfidence by nurturing the illusion of the world as a more predictable place than it is. Besides, hindsight bias can also lead to perceived risky investments as a delusional mistake in the investor's mind. For example, when the value of a stock falls, this decline may seem inevitable. Thus, the investor wonders why the financial advisor did not recommend selling this stock.

2.9.6. Cognitive Dissonance

When newly acquired information contradicts with previous information, people often feel psychological stress. This psychological event is called cognitive dissonance. Cognitive dissonance is mental discomfort caused by contradictory cognitions. Cognitive dissonance also refers to beliefs, attitudes and values in psychology. Smoking is a classic example of cognitive dissonance. Smoking is accepted by everyone as causing lung cancer and heart disease, but everyone who smokes wants to live long and healthily. In the case of smoking, the desire to live longer contradicts the act of doing something likely to shorten life. The tension created by this

contradiction may be reduced by denying the fact of lung cancer and heart disease, or by justifying smoking because it reduces stress or provides a similar benefit (Pompian, 2011).

According to Festinger (1975), cognitive dissonance is a tendency to change thoughts to justify past actions. Festinger's theory suggests that people are anxious because of cognitive dissonance factors, and they should change their minds to reduce this anxiety. This definition is close to Goetzmann and Peles's definition (1997), which defines it as individuals changing their thoughts to fit their past actions.

Goetzmann and Peles (1997) surveyed individuals investing in mutual funds, collecting information on which investment funds they prefer and what they think about the past performance of these funds. The reported real performances of the mutual funds for the previous year and the perceived performances of the investors that were discovered at the end of the survey were compared. According to the results of the comparison, the rate of return that investors actually earn from the funds was lower than the rate of return that they thought they would gain before they realised the gain. In other words, due to investors' cognitive dissonance incompatibility, it was observed that the funds they invested in had a positive bias related to their past performance, and the perceived performance was higher than the actual performance.

2.9.7. Conservatism

The conservation bias is a mental process in which people adhere to their old views and expectations, even though they accept new knowledge (Pompian, 2011). Noori (2016) has extended Pompian's definition by adding that the individuals' beliefs slowly change when they face new evidence. According to Pompian (2011), this bias may relate to underlying difficulty in processing new knowledge. When complex data are

presented to people, they might face with mental stress. It is easy to simply stick to their previous belief under this condition.

Conservatism bias causes investors to show an insufficient reaction to new information because they tend to insist on an opinion or prediction which is related to their own opinions. As a result of this, they react slowly to new information. For example, individuals who are exposed to conservatism bias adhere to their past earnings predictions regardless of the detailed content of earnings announcements or other public statements (Montier, 2002a). This result was supported by Noori (2016), who found that information about the company earnings announcement might be ignored due to the effect of conservatism bias.

2.9.8. Representativeness

People adhere to a number of cognitive shortcuts when assessing probabilities or predicting values. According to Tversky and Kahneman (1974), these shortcuts are useful, but sometimes they cause serious and systematic errors. The shortcut of representation is a cognitive criterion in which people evaluate possibilities by considering how A represents B. That is, how A is similar to B. This can be seen in the Tversky and Kahneman (1983) research.

Sample size neglect is the tendency for people to quickly conclude the event based on an insufficient number of data when they do not know the data-generating process. In cases where people know the process of generating data, the law of small numbers causes the result of gambler's fallacy (Barberis and Thaler, 2003). According to Tversky and Kahneman (1971), the reason for gambler's fallacy is the misinterpretation of the accuracy of the laws of chance. If a coin throw results around five times in heads, people will think that heads have already been thrown many times,

so this time, tails should be thrown (Barberis and Thaler, 2003). This idea is supported by Nofsinger (2004), and this hypothesis is implemented in financial markets. Investors often mistakenly believe that the past performances of firms are representative of their future performance and ignore the data that contradicts with this belief. In reality, bad companies do not always perform poorly, and good companies do not always perform well.

2.9.9. Framing

Framing is a tendency of decision-makers to respond to different situations in different ways, depending on the circumstances in which the options are presented (Pompian, 2011). According to Tversky and Kahneman (1981), framing is the way a decision-maker perceives the possibilities, outputs, and facts associated with a particular choice. The framing accepted by the decision-maker is partly controlled by the norms, habits and personal characteristics of the decision-maker, which formulate the problem.

It is observed that people tend to avoid risk if the presented option highlights the gain and if it is in a positive frame. In addition to this, if the option is in a negative frame that highlights the losses, people tend to seek risk. The framing is a strong bias observed in decision-making tasks. The framing bias is a part and weakness of human nature. However, although there is a strong cognitive bias, there are studies in the literature showing that certain factors weaken the framing bias such as personality, age, emotions (Sahin, 2018).

According to Rabin (1998), an important and predictable effect of framing on choices is related to loss aversion and diminishing sensitivity. A frame that emphasises losses makes it less attractive because individuals are more sensitive to losses than earnings.

Similarly, presenting a small loss can be more attractive for decision-makers. Generally, there is a possibility that a particular decision or problem can be affected by more than one framing.

2.9.10. Categorisation

Individuals tend to see the world through categories such as whether economies are in crisis or not, whether businesses are services or manufacturers, whether bonds are investment-grade or junk, whether they are a student or not. According to Kruger *et al*. (2012), categories always exist because an individuals memory is limited.

Classification can be defined as separating objects into general groups and ignoring the differences between members of the same group. It may be dangerous if members of the same group differ from each other in significant ways (Shefrin, 2010). A further definition of categorisation is given by Kruger (2012), who describes the combination of underreaction and overreaction to information. For example, a 5-star restaurant is perceived as a very good restaurant as long as they keep their 5-star rating, even if the food quality of the restaurant is starting to decline. The food quality is perceived as bad when the restaurant suddenly loses its star. In this example, a slow decline of restaurant quality shows an underreaction from the individuals. The fast deterioration in restaurant quality and losing its star causes an overreaction from the individuals.

Categorisation in the individuals' life can be seen everywhere, such as in finance, labour and product markets with significant consequences. According to Barberis and Shleifer (2003), categorisation bias is quite common in the financial markets as well. When deciding how to allocate a portfolio, many investors divide assets into extensive categories like government bonds and venture capital. The investors fund-share between these categories. Further investigation of categorisation bias in the financial

markets has been done by Kruger *et al*. (2012). Some of the firms in the financial sector are perceived as the main and important firms by investors. This kind of categorisation leads to mispricing; therefore, the stock return is miscalculated.

2.9.11. Anchoring

When people are asked to predict an unknown value, they begin by imagining a predetermined initial value in their minds. This is defined as anchoring. The value is corrected either up or down to reflect subsequent information and analysis. According to Pompian (2011), regardless of how the starting anchors are chosen, people make insufficient corrections to their anchors and ultimately produce bias in their final estimates.

Anchoring also affects financial markets. According to Andersen (2010), investors exposed to anchoring are affected by purchase prices or randomly selected price levels or indexes. Anchoring in financial markets causes the selling of valuable assets and holding to undervalue assets. The purchase price serves as an anchor.

The level of anchoring is severely affected by the degree to which the anchor is drawn; the more attention an anchor draws, the more individuals tend to be affected. If an information signal has features that are noticeable or easy to remember, then that information is noticeable and salient. With salience errors, individuals use data and news that are more specific and familiar when making investment decisions. For example, if there is news about a company which is frequently in the media, the shares of that company is preferred over other shares (Montier, 2007).

2.9.12. Availability

Availability is a mental shortcut or practical rule that enables people to predict the possibility of an output based on how familiar it is in their lives. A classic example of the availability shortcut is the tendency of people to predict that shark attacks are more likely to be a cause of death than an aircraft crash. However, the possibility of dying due to an aircraft crash is 30 times higher than shark attacks. The reason for the preference towards shark attacks is that they recall a greater fear for many people, or they get more attention from the media (Pompian, 2011).

Pompian's research was supported by Dervishaj (2018). According to Dervishaj (2018), the risk perception and understanding of risk might be wrong due to availability bias, and it leads to an important impact on decision-making. Also, individuals tend to be affected by what they remember before making decisions. An individuals memory is impacted by all kinds of factors, such as emotions and feelings, expectations and beliefs. Additionally, the media has played an important role in the individual's memory. Rare events are more noticeable to individuals after they occur because the probability of remembering is increasing. For instance, if an individual has a car accident, they are more likely to predict the chance of having another car accident as higher than the average probability. However, individuals are more likely to buy insurance to protect themselves after a natural disaster. It can be said that the individual has resorted to an availability shortcut if the probability of a situation is predicted depending on examples or links related to that situation.

According to Pompian (2006), while there are many types of availability shortcut, investors are most interested in retrievability, categorisation, narrow range of experience and resonance. Retrievability is defined as the most easily accessed

information appearing to be the most reliable. Investors may miss out on successful firms that have little or no advertisements and may direct their investment preferences to the most advertised companies due to retrievability (Pompian, 2006).

The first thing that the human brain will apply to the categorisation shortcut is to create a set of search terms for the current task. This set will scan the brain's classification structure and locate the data needed. Additionally, different tasks require different search sets. However, when it is difficult to create a frame for a search, people often use a missing result index as a source for this search. In such a case, investors make their investment choices based on classified lists that are ready to use in their minds. Other classes in their memory are ignored because they cannot be remembered. For example, American investors may ignore countries where potentially profitable investment opportunities exist because they are not included in their memory (Pompian, 2006).

A narrow range of experience is usually the case when a very restrictive frame of reference is used to make an objective judgement. For instance, a person working at a fast-growing technology company is probably in contact with other successful technology companies every day. The person in this situation will overestimate the proportional share of company successes resulting from technology-intensive sectors. Therefore, when investing, they believe that only investments made in the technology sector will be profitable. Investors can also make investment preferences in this way (Pompian, 2006).

Resonance is defined as the decisions of people that are influenced by their attitude, behaviour and character traits, and degree of compliance. For instance, classical music fans will probably overestimate the proportion of classical music listeners in the

total population. People often prefer financial decisions that comply with their characteristics or can be associated with their behaviour and attitudes. For example, a prudent individual may be deprived of the benefits of having these investments as they do not associate themselves with high price investments (Pompian, 2006).

2.9.13. Loss Aversion

The study by Kahneman and Tversky (1979) about prospect theory, has explained loss avoidance by the certainty effect. People give less weight to possible results than the results which have certainty. This is called the certainty effect. Individuals avoid risk in cases with definite earnings and take risks if there are definite losses. This situation, which causes individuals to make different choices when the same option is presented in different ways, is called the reflection effect. In 2018, a similar definition was made by Dervishaj. Loss aversion is defined as a feeling of regret.

According to Dervishaj (2018), individuals tend to underestimate diversification profits and long-term returns and overestimate potential short-term losses under the effects of loss aversion. This bias is due to the negative impact of losses and affects the investors extremely, compared to the positive impact of the same amount of profits. Thus, short-term investments are generally preferred due to the impact of loss aversion. The result of paying more attention to short-term investment has been investigated by the research. As a result of this, investors may ignore negative changes for their short-term investment, even if it is an unusual fluctuation. Therefore, a sufficiently high premium is expected to compensate for their loss aversion.

According to Merkle (2014), experienced and anticipated outcomes have to be distinguished before the evaluation of gains and losses. The balance between anticipated gains and losses is based on the idea of lotteries and gambling. It can be

said that individuals are able to predict the impact of gain and loss. The individuals' ability to cope with losses is fairly good. It seems that losses do not hurt individuals as much as they are expected to when experienced.

Pompian's study (2011) attempted to measure the acceptable risk regarding earnings. The earning should be two times larger than the risk. A person who avoids loss may claim a minimum of $2 for every $1 risk. In this scenario, the risk is unacceptable if it does not pay twice the risk. One major drawback of this result is that the income level of individuals should be considered. If the research had split by regarding individuals' income level, a more interesting result might have been obtained.

Further investigation on the nature of loss aversion and the effects of learning and sophistication has been carried out by Merkle (2014). The result of this study shows that previous losses reduce anticipated loss aversion. It can be said that individuals learn from the experience of loss to better estimate their anticipated outcomes. Financial literacy and investment experience have an important role in preventing individuals from having loss aversion bias.

To sum up, young adults decisions involve behavioural biases due to the nature of the human being (Shefrin, 2010). According to Montier (2007), behavioural biases cause hurtful, even painful decisions. The most common behavioural biases should be known in order to eliminate their negative effects on young adults financial decisions. In the literature, there is not adequate research that relates to young adults behavioural biases. The sub-research question of "what are the most common behavioural biases among young adults who live in British and Turkish culture?" was investigated. Therefore, this research will fill the gap in the literature by identifying the

most common behavioural biases among young adults in Bristol and Istanbul so that their negative effects may be decreased.

2.10. Young Adults' Financial Literacy and Behavioural Biases

Financial issues are an important part of daily life for individuals, families and societies. In particular, the financial decisions of young adults affect both their families and economies significantly (Lusardi and Mitchell, 2014). Generally, bad financial decisions result from insufficient financial knowledge. This situation causes young adults to borrow more, save less and do not make a plan for their retirement (OECD, 2015). Poor financial decisions arising from insufficient financial knowledge are likely to lead to a decrease in the welfare levels of young adults.

Young adults need to have basic knowledge and skills to make good financial decisions (Chen and Lemieux, 2016). However, young adults have very low financial knowledge and skills (Mandell and Klein, 2009). The reason for this is that young adults often learn financial issues from their families. However, it is obvious that many families do not have sufficient financial literacy (Jorgensen, 2007). For this reason, individuals borrow more and make less savings and investments. Families should be educated in financial matters as well as young adults because young adults often learn financial matters from their families (Kim *et al*., 2017). Thus, the debt problem on individuals and therefore, families may decrease to some extent.

Developed countries are spending more on education because they have a better financial and economic system. Well-informed and well-educated young adults are expected to make good financial decisions for themselves and their families (Hilgert *et al*., 2003). However, today the debts of young adults are increasing rapidly in

developed and developing countries. The debt management skills of young adults can be improved by increasing financial literacy (Sevim *et al*., 2012). In addition, there is a lack of basic financial knowledge and motivation to implement good financial management among young adults. (Lusardi and Tufano, 2008). Most of the young adults do not prepare a budget, they do not have an emergency fund, they get unnecessary loans, and as a result of this, they pay interest. This may be the result of a lack of understanding of the financial world or an inability to learn simple financial principles (Gokmen, 2012).

The most common reason for the low level of financial literacy for young adults is their low level of financial knowledge. They generally have average knowledge about basic financial issues, but they do not have sufficient knowledge about complex financial issues (Volpe *et al*., 2002; Lusardi and Tufano, 2008; OECD, 2015; Kutlu, 2018). For this reason, young adults may prefer to stay away from financial markets. On the other hand, young adults with low financial knowledge who are actively involved in financial markets are willing to take lower returns due to insufficient advanced financial knowledge (Sevim *et al*., 2012).

Financial behaviour and financial attitude affect young adults' attitudes toward money. Human behaviour related to money is called financial behaviour (Xiao and Porto, 2017). Young adults who are well informed on financial issues are actively involved in financial markets. It also makes effective investments. At the same time, young adults with high financial knowledge exhibit less risky financial behaviour (Borden *et al*., 2007). Therefore, it can be ensured that young adults exhibit better financial behaviour by increasing their financial knowledge (Hilgert *et al*., 2003).

Long-term financial decisions are very important for young adults, but they should also be knowledgeable about financial alternatives such as savings and investment. When young adults are no longer working in their retirement, they may be able to maintain their financial well-being thanks to financial planning (Huston, 2010).

One of the key points of making good financial decisions is the high level of financial literacy. However, it is not the only important determinant of good financial decision making. Because financial literacy is very low even in well-developed countries (OECD, 2015), therefore, good financial decision making and financial behaviours that affect the decisions of young adults are being investigated. Behavioural biases affecting the behaviour of young adults also play a critical role in this process. Young adults can make irrational financial decisions due to behavioural biases. As a result, they can make ineffective investments. The fact that young adults have high financial literacy increases the probability of making good financial decisions (Lusardi and Tufano, 2008) while having behavioural bias decreases this possibility (Baker and Nofsinger, 2002).

Financial literacy has a significant and positive impact on young people's participation in the stock market (Hung *et al*., 2009; Van Rooij *et al*., 2011). Young adults who have an active role in the capital markets and rely on their financial knowledge have overconfidence bias (Xiao and Porto, 2017). Similarly, when the financial behaviour of young adults in 11 European countries is examined, it is observed that young adults with high financial knowledge are affected by some behavioural biases such as overconfidence, conservatism, the illusion of knowledge and cognitive dissonance (Christelis *et al*., 2010).

According to Shefrin (2010), one of the most common behavioural bias among individuals is overconfidence. In general, young adults tend to overestimate their knowledge and skills in areas where they perform well. This situation causes young adults to take biases decisions because they think they know more than what they really know. In addition, young adults, especially new entrepreneurs, tend to receive more advice than experienced ones (Sevim *et al*., 2012). This difference between experienced and new entrepreneurs is explained by overconfidence. In itself, overconfidence can often be seen as a positive feature, especially for entrepreneurs, as it leads to both short and long-term survival for them. If individuals do not recognize their limits due to overconfidence, the decisions taken will include biases.

The probability of occurrence positive results is estimated more than negative results. This situation shows that there is an overoptimism bias in individuals (Shefrin, 2010). One of the main reasons for young adults to face a high level of debt in the future is to make financial decisions with overoptimism bias (Montier, 2007). Besides overoptimism bias, while people tend to accept information to confirm their thoughts and beliefs, they tend to ignore information contradicted with their own thoughts and beliefs (Shefrin, 2010). This is known as confirmation bias.

In a study on university students conducted by Das and Das (2001), they stated that this bias was very common among university students. Male students find male professors more successful, while female students find female professors more successful. In short, it shows that students see success close to their own image. This suggests that if young adults have a strong sense of investment, they will tend to choose the information that is linked to that belief. As a result, while young adults tend

to ignore the information that is contradicted with their thoughts, they tend to accept information that supports what they want to believe (Pompian, 2011).

According to Pompian (2011), many individuals tend to believe that they can control or at least affect the outcome of events, although it may not affect the outcome of events. This bias is more common among overoptimistic individuals. These people also think that the increase in the level of knowledge will increase the accuracy of their predictions.

To sum up, the relationship between financial literacy and behavioural biases has not been investigated adequately for young adults. Also, the majority of financial literacy studies targeted different age groups such as university students (Ergun, 2018; Potrich, 2016; Sarigul, 2014), the elderly population (Lusardi *et* al., 2014; Lusardi and Mitchell, 2008) or more general population (Kunovskaya, 2010; Tschache, 2009; Volpe, Kotel and Chen, 2002). This study will fill the gap in the literature by finding the relationship between these two variables for young adults. This research specifically investigates whether behavioural biases can be reduced by increasing financial literacy for young adults. In order to investigate it, the sub-research question of “what is the relationship between financial literacy and behavioural biases among young adults who live in British and Turkish culture?” was examined.

2.11. Research Gap

Angela *et al*. (2009) measured financial literacy by combining four different surveys. The first survey, which is made up of 13 true/false and multiple-choice questions, is related to stock investment. The financial literacy survey by Lusardi and Mitchell (2007) was used to create the first survey. The second survey is based on the

performance of a hypothetical choice experiment. The third survey contains 70 true/false questions related to institutional knowledge, compound interest and portfolio diversification. It was developed based on the study carried out by Milles Kimball and Robert Willis (2006). The last survey covers 23 multiple-choice questions, including long-term investment strategies. The results of this study revealed that the financial literacy level of Americans is low and that long-term investment decisions were affected negatively by poor savings and investment decisions. Financially illiterate individuals tend to engage less in financial practices such as planning for retirement.

The financial literacy levels of German households were investigated by Bucher-Koenen and Ziegelmeyer in 2011. The survey method was used to collect data. Financial literacy was measured based on the understanding of interest rates (numeracy), inflation, and risk and diversification questions. The main problem for the measurement of financial literacy is using only financial knowledge to calculate financial literacy. As a result of this research, individuals with higher levels of financial literacy are shown to prevent a financial crisis when compared with individuals having low levels of financial literacy. Generally, financially illiterate individuals miss higher return investment opportunities and prefer not to invest in the stock market. It can be said that individuals with low levels of financial literacy tend to make more mistakes in their financial decisions.

The study by Capuano and Ramsey (2011) revealed the importance of financial literacy on consumer behaviour in Australia. The survey covered money management skills, numeracy, budgeting, saving and planning, borrowing and debt, self-help and understanding financial products. The study showed that financial products are not understood by individuals. However, there is a significant correlation between wealth

and financial literacy. Individuals gain financial literacy with financial experience, gained by exposure to the markets. Also, it can be obtained through financial education. Financial experience and education provide more savings, good consumer habits, financial efficiency and better financial behaviour.

According to Knolls and Houts (2012), the financial world has become more complex in recent years, and individuals deal with financial issues due to inadequate financial knowledge. In 2012, a psychometrically financial knowledge scale was developed by Knolls and Houts to reduce the variability in the measurement of the financial knowledge score aspect of financial literacy. Interest rates, inflation, time value of money, investing, diversification of risk, housing, debt management, retirement savings, life insurance and annuities questions were used in their study.

Cameron *et al*. (2014) investigated the financial literacy level among high school students in New Zealand to develop a financial education programme. Only financial knowledge questions consisting of savings, spending, money management, using credit and earning income were used to measure financial literacy. The result of the study showed that financially poorer students have the lowest financial literacy level. Also, students with a low financial literacy level have fewer English and mathematical skills than students with a higher level of financial literacy.

The financial literacy levels of university students have been examined using financial knowledge, behaviour and attitude as components of financial literacy (Alkaya and Yagli, 2015). Questions on numeracy, interest rates, diversification, inflation, risk and financial product knowledge have been used to test financial knowledge, and financial attitude was measured using three sentences related to money management. Financial behaviour questions consisted of budgeting, financial position, paying

regular bills and comparison of price. The results of the study revealed that the family played a crucial role in financial literacy education, females tended to have less confidence in their financial knowledge and skills, more avoidance of financial risks and less interest in financial matters than males, and males tended to use debt more than females.

In 2016, the financial behaviours and knowledge of Chinese migrant workers were examined by Chen and Lemieux. The financial literacy level was measured using financial knowledge, behaviour and attitude. Five basic numeric questionnaires, eleven saving and borrowing questionnaires, and seven investment and risk questionnaires were used to measure the financial knowledge score. Five multiple-choice questions and four multiple questions were also used to calculate financial behaviour and attitude score, respectively. The results of the study revealed that these Chinese migrant workers had a low level of financial knowledge. Thus, low beneficial financial behaviour was demonstrated.

The financial literacy level of German high school students was measured by Erner *et al*. (2016). Financial literacy was divided into two categories: basic and sophisticated. Basic financial literacy was covered by questions related to numeracy, compound interest, inflation, time value of money and money illusion. Sophisticated financial literacy was covered by questions related to the stock market, mutual funds, bonds, long period returns, volatility and risk diversification. 67% of the basic financial literacy questions were answered correctly, while students responded to fewer sophisticated financial literacy questions, which indicated that German high school students exhibit a lack of financial knowledge.

Additionally, financial literacy levels changed according to socio-demographic factors, with female students exhibiting less financial knowledge than male students. Another interesting result is that a low level of mathematical skills was related to a low level of basic financial literacy, while a low level of cognitive and foreign language skills was related to a low level of sophisticated financial literacy.

The financial literacy levels of 17 OECD countries have been investigated by the OECD (2016). The survey consisted of financial knowledge, behaviour and attitude questions. Financial knowledge scores were calculated using the time value of money, interest paid, compound interest, risk and return, inflation, diversification and division questions. Financial behaviour scores covered questions on budgeting, savings, purchasing, timely bill payment, keeping watch of financial affairs and long-term financial goals, and choosing financial products and borrowing to make needs meet. The financial attitude was measured by money attitude. According to the OECD (2016) research, France has the highest financial literacy level while Poland has the lowest financial literacy level. The financial literacy level of the United Kingdom and Turkey is below the average financial literacy level of all countries. Hong Kong has the highest financial knowledge, and the highest financial behaviour score belongs to France. New Zealand has the highest attitude score.

Malaysia has the lowest financial knowledge, and the lowest financial behaviour score belongs to Poland, with Jordan having the lowest financial attitude score. The financial knowledge score of Turkey is equal to the average financial knowledge score of all countries, while the financial knowledge score of the United Kingdom is below the average financial knowledge score of all countries. The financial behaviour score of Turkey is below the average financial behaviour score of all countries, while the

financial behaviour score of the United Kingdom is above the average financial behaviour score of all countries. Finally, the financial attitude score of Turkey is below the average financial attitude score of all countries, while the financial attitude score of United Kingdom is equal to the average financial knowledge score of all countries.

Aksoylu *et al*. (2017) investigated the financial literacy level of individuals in Kayseri. Simple division, time value of money, interest paid, simple interest, compound interest, risk and return, inflation and diversification were used to measure financial literacy levels. The results of the study show that females have a higher financial literacy level than males. The 25–34 age groups are more successful in terms of financial decisions, and individuals with higher education levels have a higher financial literacy level. Individuals with a higher income also have a higher financial literacy level than individuals with low income. The financial literacy level of individuals in Kayseri is not high. Low-level financial literacy is affected by society, family and culture, and by where they are living.

In 2018, the financial literacy levels of individuals in India was measured using 50 survey questions. The survey consisted of saving techniques, banking and saving products, insurance products, capital market products, pension-related products and commodity futures market products. The results of the study indicated that the majority of the population in India trust banks more than other financial institutions. Banks are also mostly preferred by individuals for saving their money as they think that it is the safest place for investment. Additionally, insurance products are not preferred due to a lack of knowledge. However, the procedures of the institutions and their products are quite complicated for the individuals.

Relationships between behavioural biases and financial literacy levels of young people have not been adequately researched in the literature. However, there are some studies that examine only the behavioural biases of individuals. Overconfident investors' behaviour in the stock market was examined by Inaishi *et al*. in 2010. They concluded that positive news increased to individuals' self-confidence. Japelli and Padula (2013) found that portfolio preferences in individuals over the age of 50 in 11 countries of Europe are related to cognitive abilities. Accordingly, while lack of knowledge is important in the relationship between cognitive abilities and stock holding, health status negatively affects stock ownership. In contrast, social activities are positively correlated with share ownership.

Benjamin and Shapiro (2005) investigated whether cognitive abilities reduce psychological illusions. For this, they conducted two laboratory studies for Harvard University undergraduate students and high school students from Chile. The first of the results of the study is that even individuals with the highest cognitive ability show significant illusions. Frederick (2005) examined the relationship between individuals' decision behaviours and cognitive abilities. Accordingly, it was found that individuals with high cognitive ability scores were more calm and more prone to taking risks. In the Frederick study, the three-item Cognitive Reflection Test was used to measure cognitive abilities.

Bucher-Koenen and Ziegelmeyer (2011) investigated the relationship between financial crisis, financial literacy and cognitive ability on the German household. In the study, they described households with low cognitive abilities and financial knowledge as those who tend to make mistakes and stay away from risky assets.

The relationship between investment decisions and behavioural factors was examined by Alquraan *et al*. (2016). They found that overconfidence has a meaningful relationship with investors' investment decisions. They also found that there was no relationship between investors' herd behaviour and investment decisions. In addition, Chavali and Mohanraj (2016) examined the relationship between risk tolerance and investment decisions. According to the result of this study, they found that investors prefer certain earnings rather than an uncertain future.

In the literature, there are not common methods of financial literacy measurement. Therefore different financial literacy components have been used in order to measure financial literacy. In addition to this, most of the financial literacy literature focuses on the situation in the US. Also, the majority of financial literacy studies targeted different age groups such as university students (Ergun, 2018; Potrich, 2016; Sarigul, 2014), the elderly population (Lusardi *et* al., 2014; Lusardi and Mitchell, 2008) or more general population (Kunovskaya, 2010; Tschache, 2009; Volpe, Kotel and Chen, 2002). The financial literacy level of young adults has not been adequately investigated yet.

The most important component that increases the financial literacy level of young adults has not been investigated in the literature. Young adults financial well-being may be increased by a high level of financial literacy. At this point, the most important components of financial literacy should be investigated.

The behavioural biases survey was classified by Hirshleifer in 2001, but the classification was very complicated. Later, Montier (2007) simplified this complex classification of behavioural biases in terms of financial decisions. The behavioural

biases of young adults have not been adequately examined. Lastly, financial literacy and behavioural biases have not been compared for young adults.

2.12. Summary

In this chapter, all accessible literature related to financial literacy and behavioural biases have been reviewed based on the Research Problem and Research Aim and Objectives presented in Chapter One. Key concepts about financial knowledge, financial behaviour, financial attitude and fifteen different behavioural biases were clarified and discussed in regard to the purpose of this study. In the next chapter, theoretical framework will have developed based on these discussions.

Chapter Three: Framework Development

Overview

Relevant literature was reviewed and discussed in Chapter Two. In this chapter, a theoretical framework will have been created. It will be used as a guideline to proceed to the following empirical study. Also, this chapter consists of two parts which are a formulation of main research question and sub-research questions and the process of framework evolution.

3.1. Research Problem and Research Question

This study intends to examine the following research problem as it is presented in Chapter One.

"*How behavioural biases vary according to the financial literacy level among young adults in the UK and Turkey?"*

This investigation needs more than one approach in order to find an appropriate answer to the research problem. A research question needs to be designed for each of these approaches. First of all, the relationship between financial literacy and behavioural biases needs to be investigated, and this investigation is conducted by answering the following question.

Sub-research Question One: *What is the relationship between financial literacy and behavioural biases for young adults who live in British and Turkish culture?*

In the first sub-research question, it is aimed to reveal how does the culture affect the relationship between financial literacy and behavioural biases. Financial literacy and

behavioural biases level should be assessed in order to investigate the relationship between these two factors. The most common behavioural biases should be investigated in order to clarify the cultural effect on behavioural biases which derives sub-research question two.

Sub-research Question Two: *What are the most common behavioural biases among young adults who live in British and Turkish culture?*

The answer to the second sub-research question may help to reduce the impact level of the most common behavioural biases by taking precautions. Only focusing on to reduce behavioural biases level of young adults is not to be enough to increase the financial welfare of young adults. In this point, young adults need a high level of financial literacy to make good financial decisions. Therefore, the third sub-research question derives from this point.

Sub-research Question Three: *What are the most significant factors in relation to raising the financial literacy level of young adults?*

Lastly, by investigating and combining the results of question one and three, the research problem is further discussed and revealed by answering the following fourth sub-research question.

Sub-**research Question Four:** *To what extent do culture and social demographic factors influence young adults' financial literacy and behavioural biases in Bristol and Istanbul?*

In the next section, the theoretical framework will have been developed.

3.2. Framework Evolution

This section includes the framework development of financial literacy and behavioural biases. Also, it covers the integration of financial literacy and behavioural biases frameworks.

3.2.1. Financial Literacy Framework Development

Over the decades, the awareness of the importance of financial literacy has increased in both emerging and developed economies. These economies try to ensure that their citizen financially literate. A lack of financial literacy causes enormous adverse effects on both personal and, ultimately, global financial resilience (OECD, 2009).

Individuals' habits and behaviours are shaped from a young age by learning their parents and others around them. According to Whitebread and Bingham (2013), individuals' adoption of beneficial behaviours and attitudes depends on early intervention. Young people should understand basic financial principles and practices from an early age before reaching adulthood. Thus they can operate within the complex financial markets. With the increasing complexity of financial markets, young adults may have to bear more financial risk than their parents. In particular, they are likely to take more responsibility for planning their retirement, savings and investments. They may also have to deal with more sophisticated and diverse financial products (OECD, 2017). For these reasons, first of all, the financial literacy framework has been developed for young adults in this research.

As stated in Chapter Two, financial literacy is knowledge and understanding of risks and concepts related to financial subjects. As well as it is an application of such knowledge and understanding to financial decisions by using financial skills and

attitudes in order to make effective financial decisions and to improve the financial well-being of both individuals and societies (OECD, 2017). Based on this definition, financial literacy components are financial knowledge, financial behaviour and financial attitude.

Figure 4 presents financial literacy framework in this research. Financial knowledge, financial behaviour and financial attitude are used in this framework as core components that form the basis of effective financial decisions. These components are considered as financial literacy pillar that could benefit an individual (OECD, 2017). Individuals can maintain or improve their financial well-being with a combination of these components based on individuals' characteristic, economic and cultural specifications. As with any other skills, it is unlikely that anyone will demonstrate all the core competencies listed or that individuals will find them equally easy to maintain and obtain. Therefore, it should be assumed that the development and maintenance of essential competencies for any individual is a dynamic process that takes place throughout life. It should assume that the maintenance and development of the necessary competencies for individuals is a dynamic process that occurs throughout life.

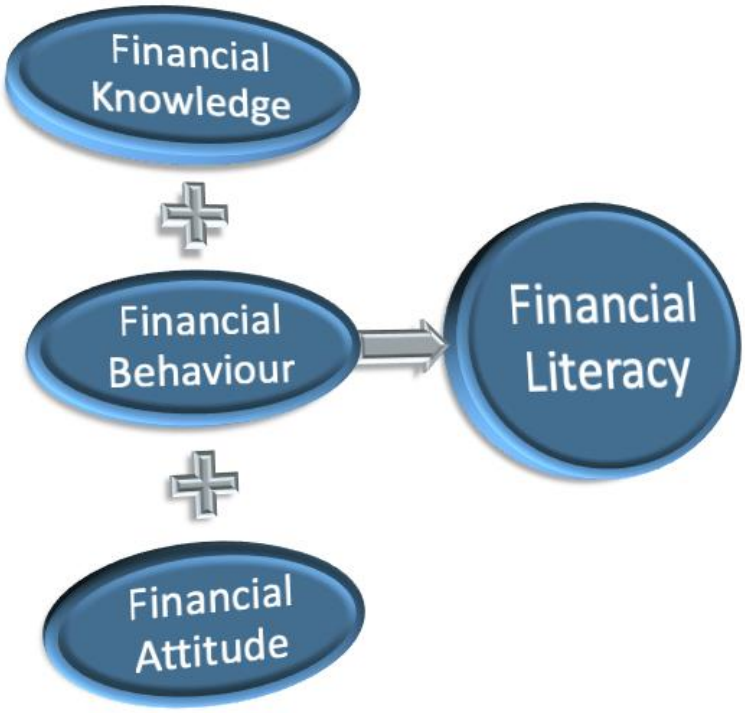


Figure 4: Financial Literacy Framework

One of the important components of financial literacy is financial knowledge that helps individuals to make good financial decisions and to compare financial products and services (OECD, 2016). The ability to apply numeracy skills in a financial context and the basic knowledge of financial concepts help individuals to manage their financial situations. Also, a high level of financial knowledge individuals can react to news and events to improve their financial well-being (Hasting et *al*., 2013).

As presented financial knowledge framework in Figure 5 includes eight basic financial subjects which are division, time value of money, interest paid loan, calculation of interest plus principle, compound interest, risk and return, the definition of inflation and diversification.

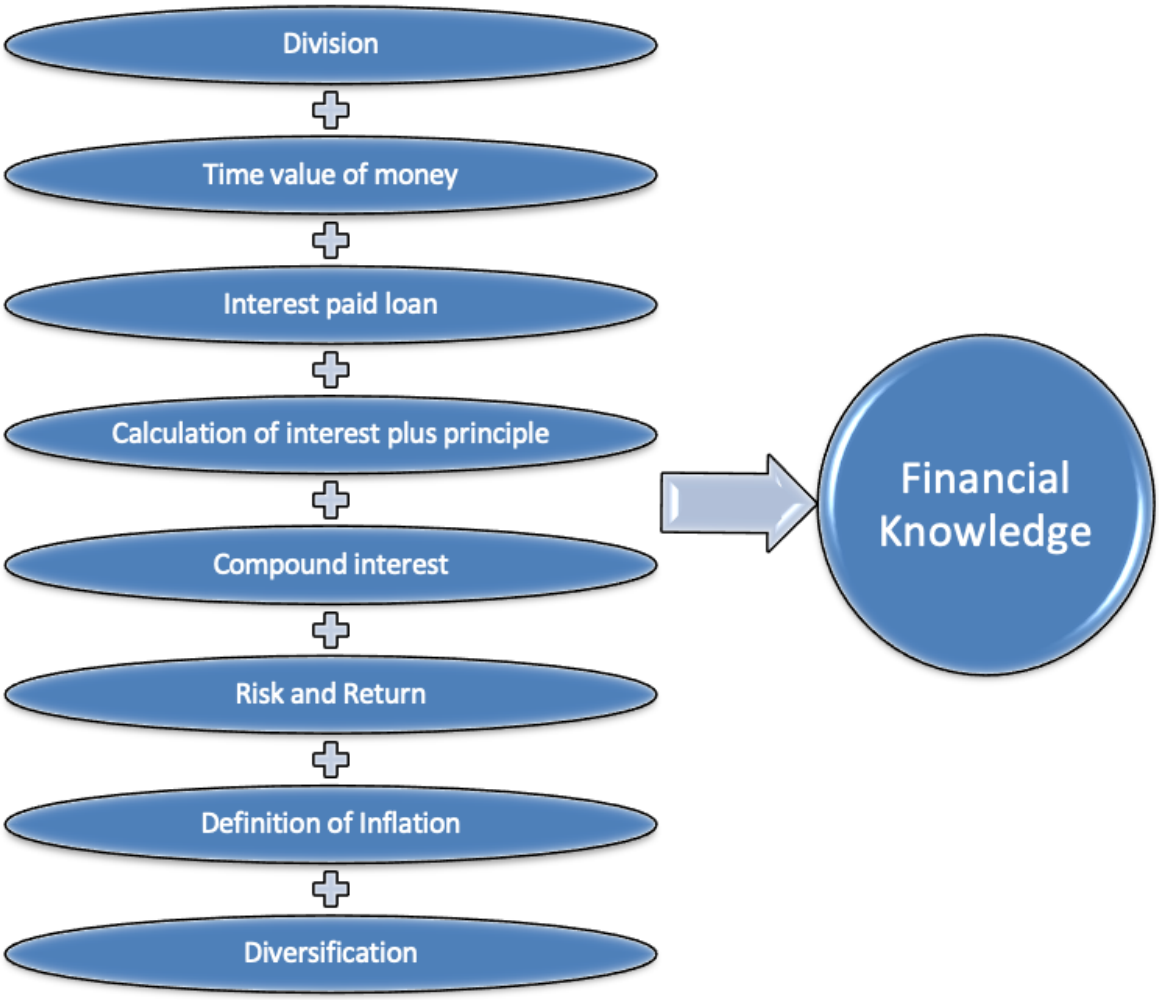


Figure 5: Financial Knowledge Framework

Eight questions were designed to test financial knowledge of the young individuals in Bristol and Istanbul. The purpose of the eight financial knowledge questions is explained in Table 1. (Please see Appendix 1 for financial knowledge questions).

Table 1: The Explanation of Financial Knowledge Questions

Financial Subjects	Purpose
Division	It tests the ability to undertake basic mathematical skills in a financial context.
Time value of money	It tests the ability to understand the impacts of inflation on purchasing power.
Interest paid loan	It tests the understanding of interest without calculation.
Calculation of interest plus principle	It tests the ability to calculate simple interest on savings.
Compound interest	It tests individuals' awareness of the additional benefit of compounding.
Risk and Return	It tests the understanding of the relationship between risk and return.
Definition of inflation	It tests the understanding of the meaning of inflation.
Diversification	It tests whether an individual is aware of the benefit of diversification.

Individuals' financial situation and well-being are shaped by their behaviour and actions in both the short and long term. Individuals' financial well-being may be affected negatively by some behaviour such as failing to plan future expenditures, putting off bill payment and choosing financial products without doing market research (OECD, 2016). For this reason, individuals' financial behaviour need to be assessed to determine their financial literacy level. (Please see Appendix 1 in order to see financial behaviour questions).

Financial behaviour framework is presented in Figure 6.

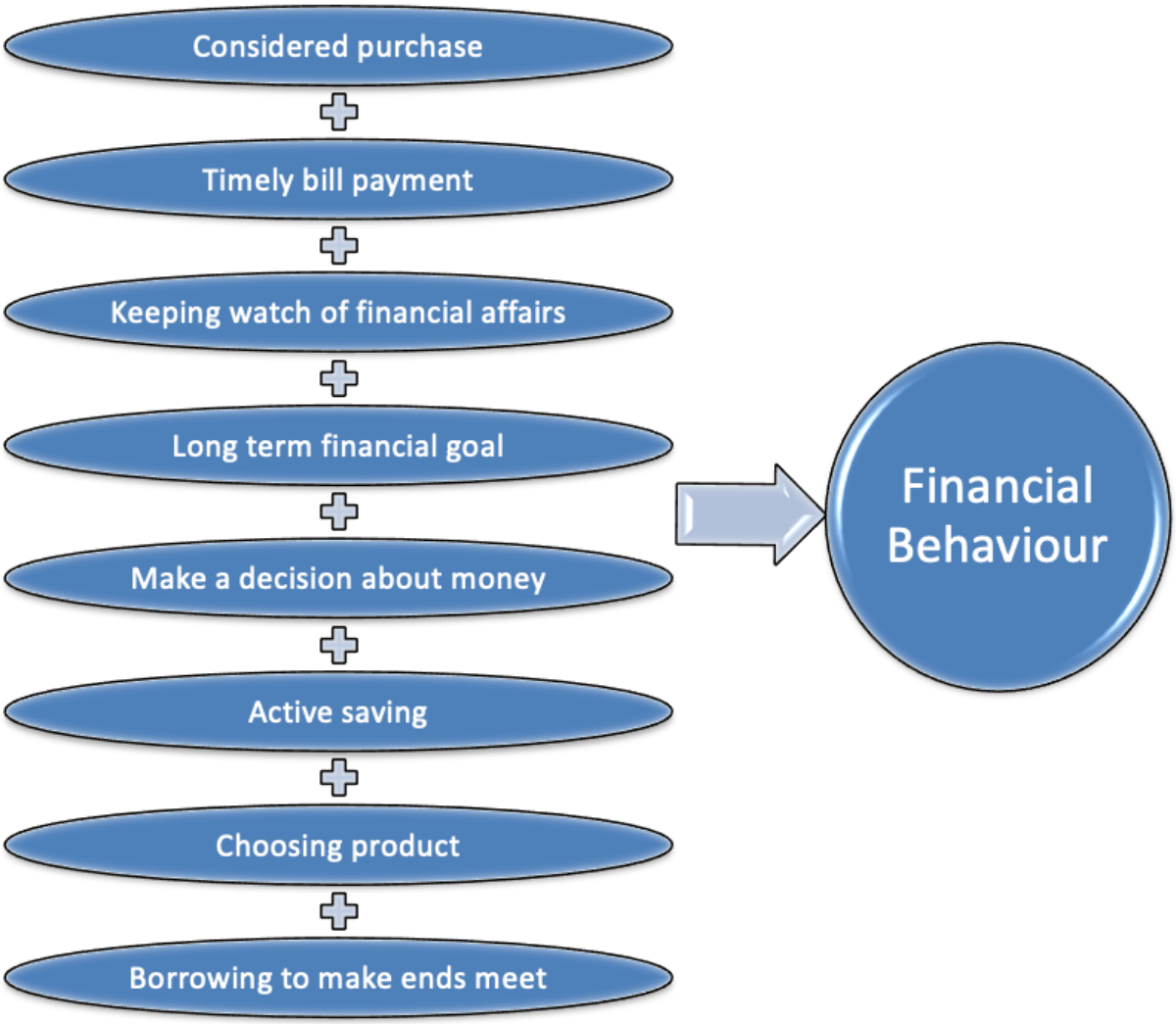


Figure 6: Financial Behaviour Framework

In this research, financial attitude is used as a third component of financial literacy. The aim of the financial attitude is to identify whether individuals focus on long-term or not. Individuals' financial attitude may affect their decisions whether they will act or not, even if they have sufficient financial knowledge and ability to act in a particular way (OECD, 2016). As financial attitude components presented in Figure 7, three statements consists of financial attitude components. These statements focus on short

term preferences through spending money and living for today. These kind of preferences are likely to obstruct behaviours that could lead to improve financial well-being. Thus, these statements assess the financial attitude of individuals by asking their approach towards the statements. (Please see Appendix 1 in order to see financial attitude questions).

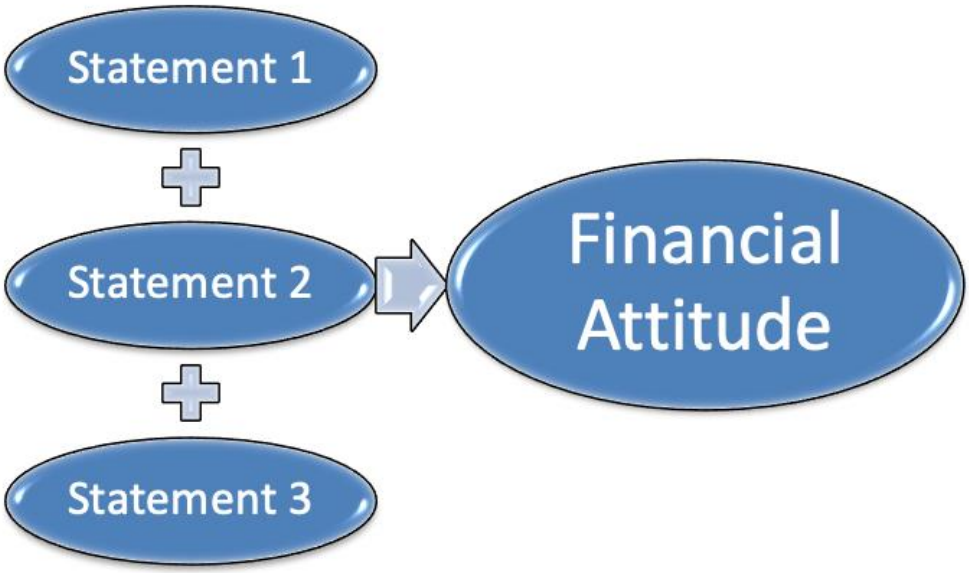


Figure 7: Financial Attitude Framework

Culture may influence the financial literacy level of individuals (Brown et *al*., 2018). There is a substantial difference in financial literacy among different cultures (Lusardi et *al*., 2010). Culture framework has been developed and added it to the financial literacy framework in order to avoid miscalculation due to arising from cultural differences. Culture framework has been developed based on risk perception, time, norm, freedom and social prestige. Ten statements have been designed to assess culture components. (Please see Appendix 1 in order to see culture questions). Figure 8 shows the culture framework for this study.

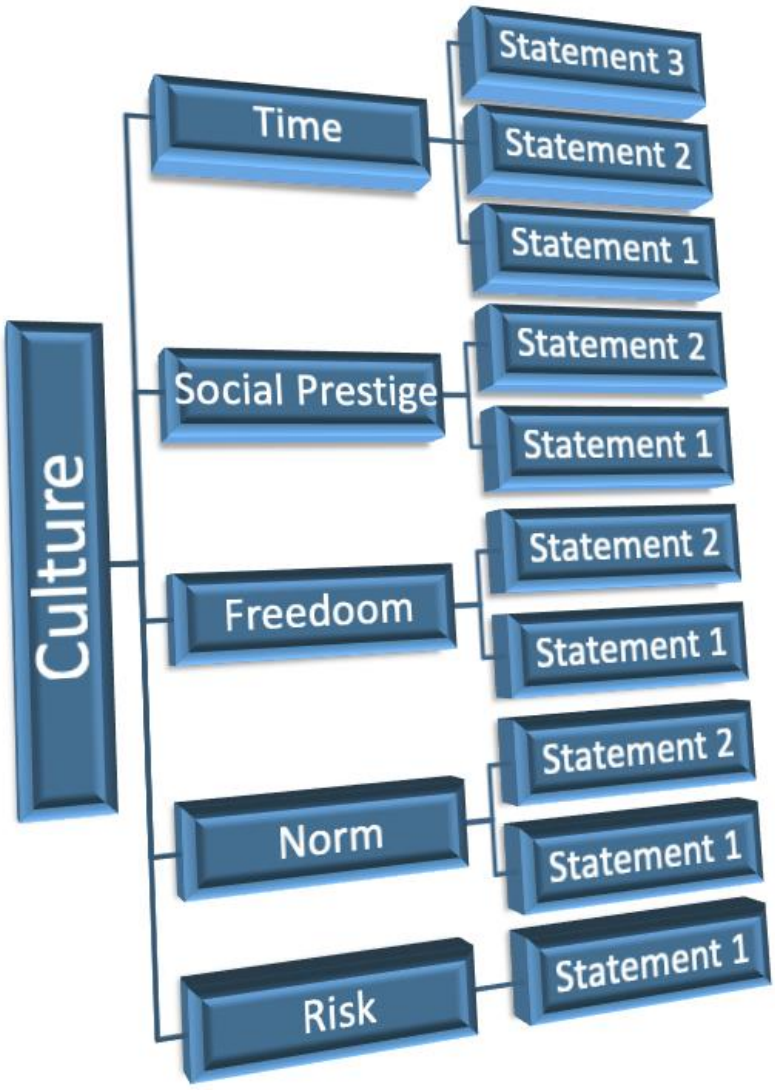


Figure 8: Culture Framework

As a summary, financial literacy framework has been developed by using financial knowledge, financial behaviour and financial attitude. Also, cultural differences have been added to financial literacy framework as it is presented in figure 9. (**FK**: Financial Knowledge, **FB**: Financial Behaviour, **FA**: Financial Attitude, **CUL**: Culture, **S1**: Statement 1, **S2**: Statement 2, **S3**: Statement 3, **C1**: Component 1, **C2**: Component 2,

C3: Component 3, **C4**: Component 4, **C5**: Component 5, **C6**: Component 6, **C7**: Component 7, **C8**: Component 8).

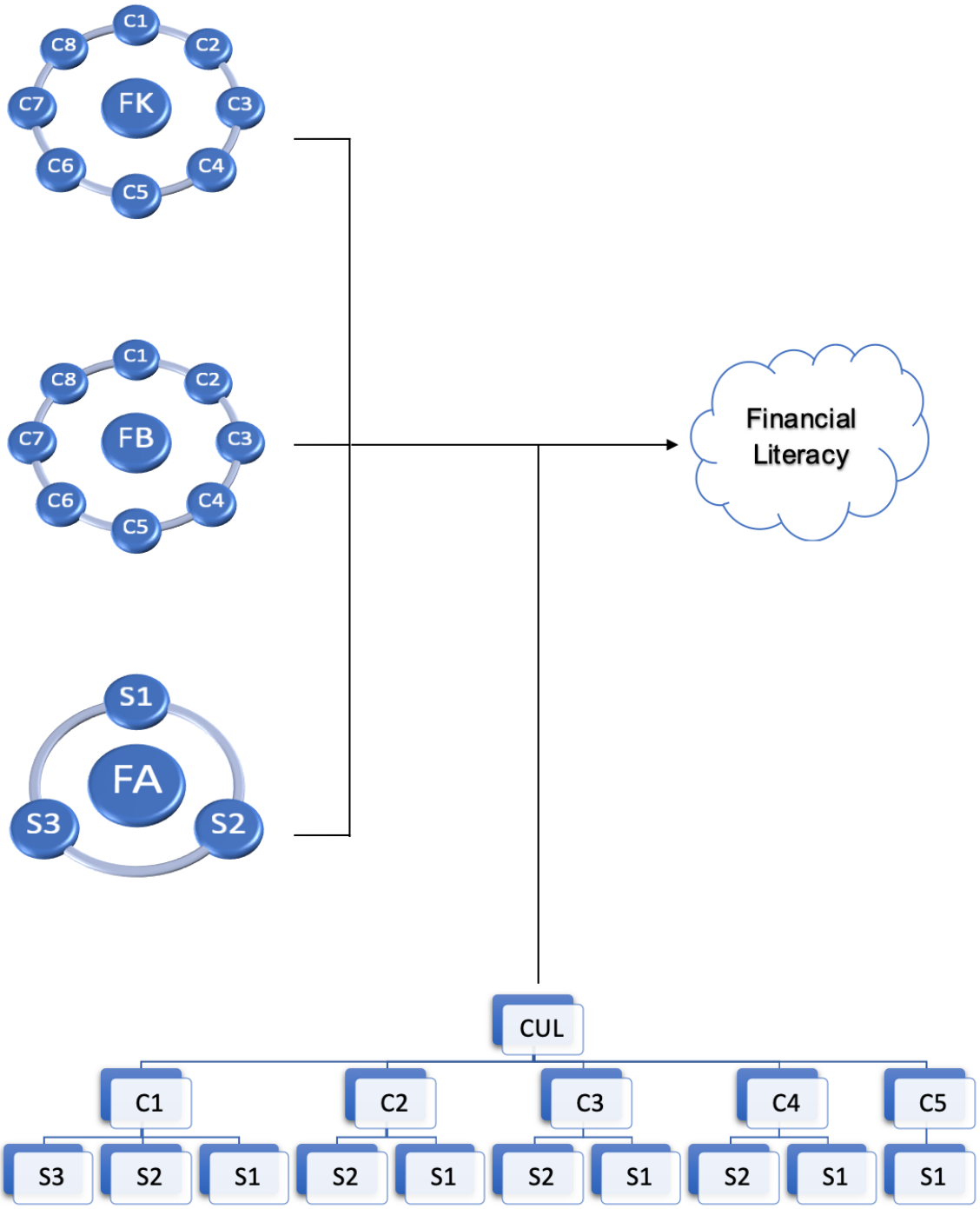


Figure 9: Financial Literacy Framework in Detail

Finally, financial knowledge, financial behaviour and financial attitude should be considered to assess financial literacy level of young individuals. Eight basic financial subjects were used to assess individuals' financial knowledge. In this point, just taking young individuals financial knowledge into consideration is not enough because their financial decisions are affected by their financial behaviour and attitude. In this context, eight financial behaviour components were used to assess individuals' financial behaviour. At the same time, three statements were used in order to determine whether young individuals' focus on long term financial plan or not. The critical point is that culture significantly influences individuals' financial literacy (Lusardi et al., 2010). For this reason, the cultural effect has been added to financial literacy framework. Risk perception, norm, freedom, time, social prestige components were used to assess culture effects. Statements were asked to participants to assess culture components.

3.2.2. Behavioural Biases Framework Development

Traditional finance is based on a normative approach, which means that traditional finance provides the solution to how the individual should behave towards financial events. As a result of this, it does not focus on the behaviour of the individual and the results of this behaviour. Unlike traditional finance, behavioural finance examines how individuals behave in financial events. Therefore, behavioural finance is based on a descriptive approach (Baker and Nofsinger, 2002). It can be said that traditional finance is based on financial events, while behavioural finance is based on the behaviour of the individuals.

According to Barberis and Thaler (2003), behavioural finance takes the approach that some financial events can be better understood by using models where individuals are

not completely rational. These common definitions show that psychology has played a crucial role in individuals' financial decisions. Also, most of the time, individuals make irrational decisions due to behavioural biases. These biases can affect individuals' all decisions, especially related to money and investing. The understanding of these biases is very important for individuals to make good financial decisions (Baker et *al.*, 2017). Behavioural biases were classified into four categories by Hirshleifer (2001): self-deception, heuristic simplification, emotions and social interaction. This classification was used by Montier (2007) for simplification of the behavioural biases' classification. In this context, some common behavioural biases among individuals were described based on existing literature - most common behavioural biases among individuals presented in Figure 10.

Figure 10: Behavioural Biases Framework

3.2.3. Integration of Financial Literacy and Behavioural Biases Frameworks

From the evolution of the above framework, it is clearly highlighted that the framework of the research is the integration of financial literacy framework (Figure 9) and

behavioural biases framework (Figure 10). (**RP**: Research problem, **R1**: Sub-research Question 1, **R2**: Sub-research Question 2, **R3**: Sub-research Question 3, **R4**: Sub-research Question 4).

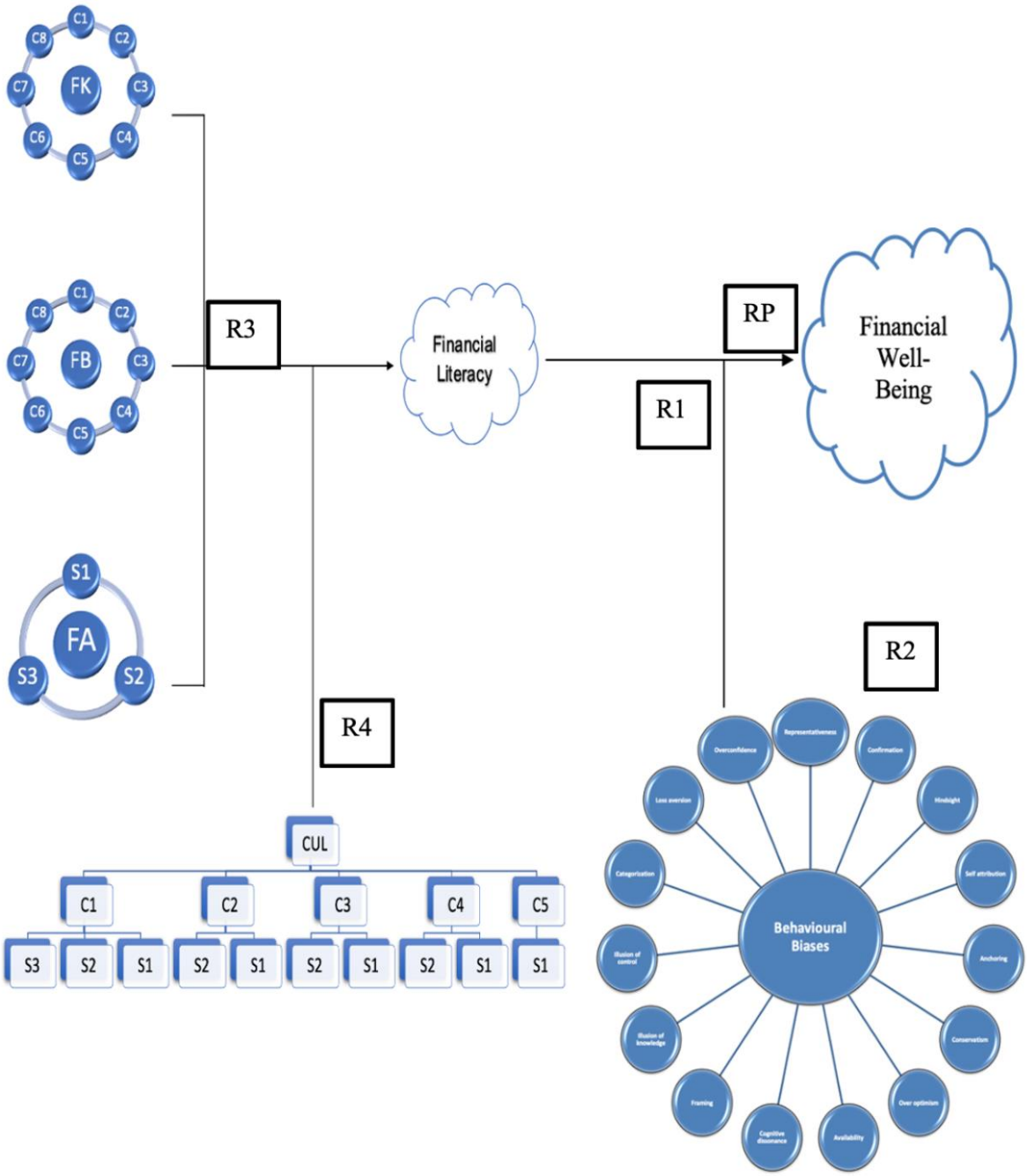


Figure 11: Framework of the Research

As stated in the research problem (RP), it is investigated whether the behavioural biases of individuals can be reduced or not by increasing their financial literacy level. Thus, it is aimed to increase the financial well-being of individuals. In this point, the relationship between financial literacy and behavioural biases is revealed by sub-research question 1 (R1). The most common behavioural biases among young individuals are examined by sub-research question 2 (R2) to reduce the negative effects of them. In order to increase the financial literacy level of young individuals, the most significant components are highlighted by sub-research question 3 (R3). Lastly, the cultural effects on financial literacy and behavioural biases are discussed in sub-research question 4 (R4).

Properly, some route will be followed for the empirical research design. Firstly, the investigation of financial literacy will be conducted. Secondly, the behavioural biases level of individuals will be examined. Thirdly, the statistical relationship between financial literacy and behavioural biases will be done.

3.3. Summary

In this chapter, firstly, main research question and sub-research questions were formulated in a step by step process based on a literature review and research problem developed in Chapter One. Secondly, a theoretical framework was created, which will be used as the analytical guidance for the following empirical research. In the next chapter, the choice of research methodology will have presented and justified.

Chapter Four: Methodology

Overview

In Chapter Three, the main research question and sub-research questions were formulated, and the framework was developed. The choice of research methodology and a set of research methods for undertaking this study will be presented and justified in this chapter. In this context, various research paradigms and their applications to the sub-research questions will be discussed deeply.

In this section, firstly, the purpose of the research is clarified. Secondly, the research paradigm and philosophy are discussed. Thirdly, the research methods are explained and justified. Fourthly, the data collection and sample selection method is defined. Lastly, validity and reliability are discussed.

4.1. The Review of Research Problem and Questions

The research methodology develops based on the research problem and questions presented in Chapter One and Three. Thus, starting from the research problem and questions review would be useful.

In chapter one, the research problem is presented as

RP: How behavioural biases vary according to the financial literacy level among young adults in the UK and Turkey?

In chapter three, the sub-research questions are described as

SRQ1: What is the relationship between financial literacy and behavioural biases of young adults who live in British and Turkish culture?

SRQ2: What are the most common behavioural biases among young adults who live in British and Turkish culture?

SRQ3: What are the most significant factors in relation to raising the financial literacy level of young adults?

SRQ4: To what extent do social demographic factors influence young adults' financial literacy and behavioural biases in Bristol and Istanbul?

The above research problem and sub-research questions underpin the following methodology discussion and development.

4.2. Research Purpose

The research problem should be investigated well before starting the research, and most type of research can be classified based on its purpose. There are three types of classification which are exploratory, descriptive and explanatory (Yin, 2003).

Exploratory research is often conducted when a problem is broad, and it is not well known or the problem that has not been clearly defined (Strydom, 2013). It attempts to investigate a new subject or an unfamiliar subject that is difficult to delimit the problem of study. It is not intended to provide the final and definitive answers to the research questions, but merely discusses the subject of the analysis with different degrees of depth. Exploratory research is a valuable way to learn what is going on; to look for new insights; to ask questions and to analyse the phenomena in a new light. An interview is an approach that is ideally adapted for knowledge collection when undertaking exploratory research (Yin, 2003). In short, the aim of exploratory research is to more specifically formulate issues, explain concepts, gather interpretations, gain perspective, remove unrealistic ideas and shape hypotheses. In order to perform

exploratory research, literature research, surveys, focus groups and case studies are typically used. Hypotheses can be generated through exploratory testing, but they are not intended to be tested (Hearn, 2012).

Nassaji (2015) suggests that where a topic is well structured, and there is no aim of exploring case or effect relationships, **descriptive research** is sometimes used. Descriptive research represents an accurate profile of individuals, events or circumstances. It needs considerable prior knowledge to provide an accurate picture of the situation of a particular research question. In comparison to exploratory research, descriptive research describes questions, people surveyed, and the process of study prior to the start of data collection. In other words, descriptive research describes the aspects of the study, including who, what, where, why and often how the study is performed. Such planning gives one the chance to make any appropriate improvements before the data collection process has started. Descriptive analysis, however, should be regarded as a means to an end rather than an end itself (Yin, 2003).

When the emphasis is on relationships between cause and effect, the analysis may be an **explanatory** explanation of which effects are created (Davidoff, 2019). It is to establish detailed hypotheses that can be used to clarify the generalisations of empiricism. Our consideration in the causal analysis is how one factor influences, or is responsible for, changes to another factor. The researcher formulates theories based on this, which are empirically verified. When there is no clear understanding of what model to use and what characteristics and relationships are relevant, this form of study is also appropriate (Yin, 2003). Also, explanatory studies go well beyond explanation and aim to clarify the reasons for the phenomenon that was only found in

descriptive research. Another type of research goal is explanatory research based on hypothesis, and the theory is generated to explain why and how questions are asked (Davidoff, 2019). Deductive hypothesis testing is the method for implementing the purpose of this form of analysis.

Based on the above discussion in this study, exploratory research is adopted to figure out the SRQ1, SRQ2 and SRQ3. These sub-research questions are not clearly defined and explored in the literature. Also, explanatory research is conducted to find out the RQ4. In this point, it is investigated how one factor which is culture affects others which are financial literacy and behavioural biases.

4.3. Research Perspective

Determining the best research method to use for research is based on the research problem and the research question. Two different methodological approaches are used in the social sciences (Saunders et *al*., 2009). These are classified as the qualitative method that expresses the production of non-numerical data and the quantitative method that expresses the production or use of numerical data. Both of these methods have different approaches, tools and techniques. Research can be conducted in either a qualitative, a quantitative way or a mixture of both based on the researcher's understanding of the research problem and questions.

Qualitative research relies on the interpretation of a humanistic or idealistic approach to a research question. It is used to explain the values, experiences, behaviours, attitudes, and interactions of individuals. It produces data which is non-numerical. The purpose of qualitative research is to analyse the phenomenon in terms of the interpretations, trends, perceptions, discrepancies and disputes that people create (Pathak et *al*., 2013). Unstructured interviews that produce qualitative data through the

use of open questions will be a perfect example of a qualitative research process. This allows the respondent, using their own phrases, to speak in some detail. This lets the researcher gain a real sense of the comprehension of a situation by an individual. The important point is that qualitative data may include sound recordings, videos, photographs, not only words and text. Qualitative explanations are formulated and different techniques, such as content analysis, grounded theory (Glaser and Strauss, 1967), thematic analysis (Braun and Clarke, 2006) or discourse analysis, can be used to make sense of the results.

The method of gathering and analysing numerical data is quantitative analysis. It can be used for identifying trends and averages, making forecasts, evaluating causal associations, and generalising outcomes to larger populations. Also, it can be used for testing hypothesis. According to Creswell (2007), this research method fits for positivist perspective. It splits the situation down to particular variables, the development of hypotheses and the testing of theories using statistical data methods and observations. Collected data needs to be transformed from words to numbers. Quantitative data can be analysed with statistics based on the principle of mathematics. Thus, the quantitative method is seen as scientifically objective and logical. Also, it reduces error and biases (Denscombe, 2010).

By systematically gathering and analysing data, the quantitative method helps the researchers to test a hypothesis while qualitative method allows the researchers to discover ideas and experience in detail. Based on the research problem in this study, collected data form participants are converted from words to numbers, and statistical analysis is applied to figure out the research problem. Therefore, in this study, the

quantitative method is a more suitable then qualitative method. Also, this method helps to reduce bias in the results.

4.4. Research Philosophy and Paradigm

Research philosophy is mainly related to the progress of knowledge and type of specific study in terms of research. All research is focused on philosophical hypotheses about how the universe is understood and how researchers can better interpret it. The first phase of the research is to determine the right research philosophy (Creswell, 2007). For this, the researcher should know the purpose of the study well and develop it by researching specific literature.

4.4.1. Philosophical Assumptions

Research philosophy largely depends on the purpose and objectives of the research. First of all, what should be collected in the research and how should be collected is determined. Therefore, based on these basic questions, a researcher decides on the research philosophy by researching process techniques and specific interests. Therefore, in this section, philosophical assumptions are briefly described.

Ontology is associated with the essential meaning of the particular situation's fact and truth. It is a central branch of metaphysics that examines the essence of being, life or reality. The researchers are, therefore, satisfied with several questions in order to fulfil the basic assumptions about the applicability of such studies. “How to know it is true” is a kind of ontology question (Robson, 2002). In this research, data is gathered from individuals from Bristol and Istanbul. Thus, data is based on these individuals’ opinions, and it reflects their experiences. The researcher can reach single, objective and independent reality, and it can be described or known as it really is.

Epistemology is a very important type of research philosophy - this type of research philosophy concerned with the basic type and the nature of the specific knowledge. The aim is to define the prerequisites of that knowledge that what makes the knowledge as fit for the research in a certain field. It covers the ways of knowledge creation and the scepticism regarding various claims for knowledge. It offers a variety of guidelines for evaluating how knowledge relates to the same principles like reality, faith and reasoning. “How to know it is true?” is a kind of epistemology question (Paul, 1993). In this study, the researcher can reach the truth to the extent that their work complies with the facts or how things actually happened. Also, the researcher can summarize the knowledge in the form of time, value and context free generalisations. Data is collected via an online survey. This allows the researcher to reach individuals who live in British and Turkish culture, at one time. Unlimited time is provided by giving an unique participant number to them. Therefore, time pressure is eliminated from them; thus, research is closer to reality. In summary, ontology indicates the theory of reality, while epistemology highlights the knowledge of that reality.

Axiology is the type of philosophy that deals with the evaluation of the results regarding the values. This philosophy also incorporates the social and moral values which are related to the society. It is the research philosophy that provides the freedom to the researchers to introduce their plans and procedures in black and white accompanied to the title of the research. This philosophy more often related to the research title and the associated value for the specific topics to be investigated. Moreover, the declarations of various values have multiple purpose usages such as the scientist that intend to investigate it and the stack holders of the study (Heron, 1996). This philosophy deals with the ethics and the values of the researcher for the research that has been carried out by a scientist for the pacific purpose. Hence the

ethical code of the researcher must be full filled. This may allows the research to associate his/her values attached to that research. “How to write about it” is a kind of axiology question (Morgan, 1998). In this quantitative research, the same process is used to data that gathered from individuals in different cultures. In other words, the data collection process is performed in such a way that the author is a neutral, value-free operator who observes, gathers data and produces evidence to explain the fact, and thus the author's own understanding is not linked to the understanding of the participants. The value-added essence of this study is not the subject of the author's open discussion but is reflected in the results and contributions.

The methodology is the systematic analysis of approaches that are, maybe, or have been adopted within a discipline (Creswell, 2003). It is typically a process of study. All components of the wide field of the methodology are data collection, participants, materials used, and data analysis. This quantitative study is organised as emerging and shaped by the researcher’s collecting and analysing of data in the current literature.

Overall, this study includes ontology, epistemology, and methodology approaches.

4.4.2. Research Paradigms

The American philosopher Thomas Kuhn (1962) first used the word paradigm to mean a philosophical way of thinking in The Structure of Scientific Revolutions. The term has an aetiological meaning in Greek as a pattern. The word paradigm is used to identify the 'worldview' of a researcher in social science (Mackenzie and Knipe, 2006). It represents the abstract beliefs and values that form how the world is viewed by a researcher and how he/she interprets and behaves in that world. As leaders in the area, Guba and Lincoln (1994) describe a paradigm as a fundamental collection of

beliefs or worldview that directs research action or an investigation. Paradigms are therefore important since they include beliefs and dictates that influence what should be studied, how it should be studied, and how the outcomes of the research should be interpreted for scholars in a specific discipline. In this study positivism, interpretivism and realism are discussed as a research paradigm.

Positivism

Positivistic is the type of epistemology that describes a given condition's epistemological situation, which is known to be the practice one. This type takes into account the high standards for the basic methodology for adding the replication choice and the ease of generalisation of the research carried out. Positivist theory seeks to explain the truth and actual reality on the basis of reality. This theory helps researchers to examine the facts that prevail in the social setting, but it is possible to generalise the results of the study in this theory to the same field studies (Remenyi et *al*., 1998). In order to build the scheme for the collection of data and creation of theories centred on this theory, the positivist research philosophy is entrenched with the current established theory.

This study includes the positivism approach as it tests the relationship between the level of financial literacy of young individuals and behavioural biases with a statistical model. In other words, these quantitative results are obtained from the static analysis. It is also assumed that, according to positivism, all types of processes and relationships between individuals can be explained by certain variations. Thus the current study has opted for the positivist philosophy as this theory has the feature to test the existing or the pre-existing theory.

Interpretivism

This form of research philosophy combines a human role and develops an appreciation of the variations and discrepancies between individuals and their role in society. This philosophy focuses on the nature of research to be carried out on individuals other than substances such as vehicles, accessories and equipment. Contrarily to positivism, human behaviour depends on how an individual perceives the conditions under which they find themselves. Interpretive researchers pursue subjective interpretations aimed at certain objects or things. The aim of social research is to react as much as possible to the perception of the respondents on the subject. The social environment must be recognised as the skilful achievement of successful social actors (Guba and Lincoln, 1994).

The research findings in positivism studies are merely descriptive, so it is difficult to know about in-depth topics (Saunders *et al*., 2009). Therefore, in this study, besides the positivism approach, the interpretive approach is used.

Realism

This is the epistemology which relates to scientific observation. Realism, as the characteristic of science, unveils the truth that has been interpreted in common sense. These facts already exist within the faculty of the mind. The philosophy of realism opposed the philosophy of idealism, which focuses on the things that are beyond the concept of mind. Whereas, realism is the form of epistemology considers and emphasises on the empirical part in order to obtain knowledge and further increase knowledge in the field. Accordingly, the fundamental concepts and rules of realism hold that the compilation of responses and the interpretation of data must be completely understood. This form of epistemology parallels positivism, which focuses

on the creation of knowledge based on scientific and static laws. More realism has two primary forms, such as “direct realism”, which focuses on individuality and interpretation in which truth is assumed to be viewed as truth through observation of sensory systems. “Critical realism” as the second dimension of realism considers and talks about the observation and tests that a person feels in reality, but these are not things in a direct association. This retains the idea that always has the senses to be deceived (Kivunja, 2017).

To sum up, positivism, interpretivism and realism are applied in this research. The following research methods classification is developed according to the above perspective and paradigms.

4.5. Research Methods

Researchers can use either qualitative research or quantitative research for their study. Quantitative methods emphasise quantitative measurements and statistical, mathematical or numerical analysis of data obtained by polls, questionnaires and surveys, or by manipulating pre-existing statistical data using computational techniques. The quantitative analysis focuses on collecting and generalising numerical data through groups of people or on describing a specific phenomenon (Babbie, 2010). The quantitative research design, therefore, deals with the quantification and analysis of variables in order to obtain a result. It includes the use and analysis of numerical data using complex statistical methods to address questions such as who, where, when, what, how, how much and how many (Williams, 2011). Sub-research questions one, two, three and four include what questions. In this study, numerical analysis is used to explain what questions.

In addition, Williams (2011) points out that quantitative research begins with the identification of a problem, the generation of hypotheses or research questions, the examination of relevant literature and the quantitative analysis of data. Similarly, (Creswell 2003; Williams, 2011), the quantitative analyses use research methods such as surveys and experiments and gather data on predetermined techniques that produce statistical data. Having understood to a certain degree what quantitative methods are all about, it is essential to examine the gap between quantitative and qualitative methods. Table 2 shows a detailed overview of the difference between qualitative and quantitative studies.

Table 2: Differences between Qualitative and Quantitative Researches

Criteria	Qualitative Research	Quantitative Research
Purpose	To understand and interpret social interaction	To test hypotheses, look at cause and effect, and make predictions.
Group Studied	Smaller and not randomly selected.	Larger and randomly selected.
Variables	Study of the whole, not variables.	Specific variables studied.
Type of Data Collected	Words, images, or objects.	Numbers and statistics.
Form of Data Collected	Qualitative data, such as open-ended responses, interviews, participant observations, field notes, and reflections.	Quantitative data based on precise measurements using structured and validated data-collection instruments.
Type of Data Analysis	Identify patterns, features, themes.	Identify statistical relationships.
Objectivity and Subjectivity	Subjectivity is expected.	Objectivity is critical.
Role of the Researcher	Researcher and their biases may be known to participants in the study, and participant characteristics may be known to the researcher.	Researcher and their biases are not known to participants in the study, and participant characteristics are deliberately hidden from the researcher (double blind studies).
Results	Particular or specialized findings that are less generalizable.	Generalizable findings that can be applied to other populations.
Scientific Method	Exploratory or bottom–up: the researcher generates a new hypothesis and theory from the data collected.	Confirmatory or top-down: the researcher tests the hypothesis and theory with the data.

View of Human Behaviour	Dynamic, situational, social, and personal.	Regular and predictable.
Most Common Research Objective	Explore, discover, and construct.	Describe, explain, and predict.
Focus	Wide-angle lens; examines the breadth and depth of phenomena.	Narrow-angle lens; tests a specific hypotheses.
Nature of Observation	Study behaviour in a natural environment.	Study behaviour under controlled conditions; isolate causal effects.
Nature of Reality	Multiple realities; subjective.	Single reality; objective.
Final Report	Narrative report with contextual description & direct quotations from research participants.	Statistical report with correlations, comparisons of means, and statistical significance of findings.

Source: Johnson and Christensen, 2008

Table 2 above illustrates the difference between qualitative and quantitative methods in a simple way. It indicates that qualitative research's main purpose is to understand and analyse social experiences, while quantitative analysis deals with hypothesis testing, looking at cause and effect, and forecasting. In addition, based on traditional scientific research, the quantitative approach produces numerical data and typically attempts to create causal relationships (or associations) between two or more variables, using statistical methods to test the relationship's intensity and significance (Jhonson and Christensen, 2008). Quantitative and qualitative analysis methods clearly differ in terms of how data is obtained and evaluated (Gelo et *al*., 2008). In order to obtain statistical analysis, the quantitative study involves the reduction of phenomena to numerical values. On the other hand, qualitative research requires data collection in a non-numerical manner, such as texts, photographs, videos. In quantitative research, variables are very significant because they are categorized and quantified by the phenomenon.

Quantitative method is selected in this study to determine the relationship between one variable and another within a population. There are either descriptive or experimental quantitative study designs. Only associations between variables are identified by a descriptive study; causality is identified by an experimental study.

Quantitative researchers seek to examine and isolate particular variables found in the context of the analysis, look for associations, relationships and causality. Their aim to monitor the environment in which the data is collected to eliminate the possibility of variables accounting for the relationships defined other than the one being examined. The strength of using quantitative methods in social science is to (Babbie, 2010);

- Enables a wider analysis, involving a greater number of topics and improving the generalisation of findings,
- It ensures better objectivity and accuracy of results. Quantitative approaches are typically designed to include data summaries that endorse generalisations about the phenomena being studied. Quantitative analysis typically requires few variables and multiple instances in order to achieve this, and employs specified protocols to ensure validity and reliability,
- The implementation of well-established criteria ensures that the study can be repeated and then evaluated and correlated with similar studies,
- A researcher may summarise huge data sources and make comparisons over time and across categories,
- By preserving a distance from interacting subjects and using agreed statistical methods, personal bias can be avoided.

Besides the strength of the quantitative research, there are some limitations for quantitative researches. They are (Brians et *al*., 2011):

- Quantitative data is more effective and able to test theories, but qualitative details may be missing,
- It uses a static and rigid technique and thus implements an inflexible discovery process,
- The creation of key questions by researchers may lead to “structural bias” and misstatement, where the data actually represents the opinion of the researcher instead of the participating topic,
- Findings present less information on behaviour, attitudes and motivation,
- Researchers can collect a dataset that is much narrower and often superficial,
- Results are limited in that they offer numerical explanations rather than comprehensive narratives and typically provide less detailed accounts of human perception,
- The study is also performed in an abnormal, artificial environment such that the degree of control can be extended to the exercise. This degree of control might not usually be in place in the real world, thus producing "laboratory results" as opposed to "real world results",
- Preset answers will not directly represent how people actually feel about the topic and, in some situations, maybe the best equivalent to the preconceived hypothesis.

Survey and correlational methods that are types of quantitative research (Sukamolson, 2007) are used to determine the relationship between variables. These types of quantitative research are discussed in the following section.

Survey;

According to Sukamolson (2007), a survey study includes the use of a scientific sampling method with a structured questionnaire to assess the characteristics of a given population through the use of statistical methods. More briefly, Sukamolson (2007), further defines the survey as a method of quantitative research that deals with "sampling questionnaire, design of the questionnaire, administration of questionnaire" in order to collect data from the population under study and then analyse it to understand their characteristics better. In addition, Kerlinger (1973) defines survey research as social science research focusing on individuals, people's essential data, and their values, perceptions, behaviours, motives, and actions. At the same time, Kraemer (1991) outlines three fundamental concepts in survey research, respectively, a survey is used to quantitatively define a sectional component of a given population that involves studying the relationship; data are collected from individuals in the survey research process; and finally, the survey sample a part of the population that is later used to generate. In this quantitative research, the survey is used to gathered data from individuals in Bristol and Istanbul.

Correlation Coefficients;

The quantitative study used to assess whether and to what extent there is a relationship between two or more variables within a population. The correlation coefficient measures the relationship between variables. Coefficients vary from +1.00 to –1.00. Higher correlations reflect stronger relationships. Positive correlations imply that as the values associated with one variable increase, so do the values associated with the other variable. Negative correlations mean that when values associated with one variable increase, values associated with the other decrease. In light of this, Leedy

and Ormrod (2010) noted that the study correlation method deals with the formation of a relationship between two or more variables in the same population. The first form of correlation design, the explanatory design, is carried out when researchers want to investigate the degree to which two or more variables co-variate, i.e. where changes in one variable are expressed in changes in the other (Creswell, 2007). The second form of correlation design, the predictive design, is used by researchers for the purpose of the analysis to predict certain results in one variable from another variable that acts as a predictor. In this quantitative research, correlation is used to determine the relationship between variables.

4.6. Research Design

Following the determination of research methods, the design of the research is the next stage of the process.

4.6.1. Justification of Research Method

In this research, financial literacy and behavioural biases were investigated. At the beginning of the research, methodology for financial literacy and methodology for behavioural biases were examined separately.

Most of the financial literacy literature focuses on the situation in the US. Also, the majority of financial literacy studies targeted different age groups such as university students (Ergun, 2018; Potrich, 2016; Sarigul, 2014), the elderly population (Lusardi *et* al., 2014; Lusardi and Mitchell, 2008) or more general population (Kunovskaya, 2010; Tschache, 2009; Volpe, Kotel and Chen, 2002). Generally, a survey is used by the researchers as a common method of financial literacy measurement (Volpe *et* al., 2002; Angela et al., 2009; Lusardi *et* al., 2014; Potrich, 2016). In addition to this, there

was not a common survey questionnaire in financial literacy literature. The OECD and the International Financial Education Network (INFE) developed a main financial literacy survey in 2011 to measure financial literacy in order to address the lack of consensus. In this research, OECD and INFE's research methodology has been used because their method has been using by many researchers since 2011 (Atkinson and Messy, 2012; Crain, 2013; Bucher *et* al., 2014; Alkaya and Yagli, 2015; Aksoylu *et* al., 2017).

Genrally, the survey method was used in the behavioural biases literature. The survey was classified by Hirshleifer in 2001, but the classification was very complicated. Later, Montier (2007) simplified this complex classification of behavioural biases in terms of financial decisions. Montier's classification is used for this research project because there is not adequate research on behavioural biases of young adults in the literature.

4.6.2. Data Collection Method

There are two types of data collection methods in research. These are primary and secondary data, and there is a distinction between these data. The primary data corresponds to the collection of new data for the purpose of a particular investigation, while the secondary data is the data previously collected for other purposes (Saunders *et al*., 2009).

According to Yin (2003), there are many basic research strategies in the social sciences. These are surveys, interviews, experiments, archive analysis and case studies. The strategy best suited for any study depends on the type of research question, degree of control, and whether it focuses on current events. If the data needed from secondary sources cannot be found in research, primary data should be used. However, primary data is usually collected for a specific purpose.

Secondary data are collected in various ways. For example, data on the market and trends can be obtained from external sources. The secondary data includes two types of data which are raw data and published abstracts (Saunders *et al*., 2009). Generally, caution is required when using raw data because the researcher has less control over these data. As the published data eliminate the data collection process, the analysis actually shows the result of the research. The data in this study is the primary data source since it was collected by young adults between the ages of 18-29 in Bristol and Istanbul using a survey method.

In contrary to qualitative data, quantitative data is more about statistics and numbers. Researchers also rely on quantitative data because they measure characteristics, attitudes, behaviours and other identified variables with a motive to either back up or oppose the hypothesis of a particular phenomenon. Researchers have the choice of either opting for online data collection or using traditional methods of data collection through proper research. However, researchers will require numerical, statistical, and mathematical methods to extract conclusions from the quantitative data obtained (Sukamolson, 2007).

The quantitative data consists of data that can be counted or expressed in numerical data. It is often used to analyse the events or levels of consistency. Also, it is gathered through a standardised questionnaire that asks questions starting with “how many” or “how much” because the quantitative data is numerical, it reflects both conclusive and objective knowledge (Leedy and Ormrod, 2010). In addition, for statistical and mathematical analysis, quantitative knowledge is commonly sorted, making it possible to explain it in the form of charts and graphs.

Quantitative data can be gathered via a traditional method or online. Five methods can be used for quantitative data collection. They are probability sampling, interviews, observation, document review, and survey and questionnaire.

Probability Sampling:

A comprehensive method of sampling by using some form of random selection and allowing researchers to make a probability assumption are based on randomly gathered data from the target population. One of the best things about probability sampling is that it helps scientists to obtain data from the population members they are interested in researching. In addition, the data is obtained randomly from the sample rules chosen to determine the probability of sampling bias (Babbie, 2010).

Interviews:

A common approach used for data collection is interviewing individuals. The interviews conducted to gather quantitative data, however, are more formal, in which the researchers only ask for a standard collection of questionnaires and nothing more than that. There are three types of interview that are telephone interviews, face-to-face interviews and computer-assisted personal interviewing (CAPI).

Observation:

It is, as the name suggests, a fairly basic and straightforward method of quantitative data collection. In this approach, by systematic analyses, researchers collect quantitative data by using methods such as counting the number of individuals present at a specific time at the particular event and a specific location or number of people attending the event in a particular venue. More frequently, researchers have a naturalistic observation technique for quantitative data collection that requires sharp

observation skills and senses to get the statistical values about “what” and not about “how” and “why” (Brians et *al*., 2011).

Document Review:

Document review is a method used to obtain data after review of existing documents. It is an easy and reliable way of collecting data as records are manageable and a realistic resource for obtaining eligible data from the past. Apart from improving and promoting research through the provision of additional research data analysis papers, it has emerged as one of the beneficial methods for collecting quantitative research data. Public records, personal documents and physical evidence are types of document review (McNabb, 2008).

Public records analyse the official, ongoing documents of the company for further study. Personal documents analysis, unlike public records, deals with individual personal accounts of the acts, attitudes, health, physique and behaviours. In terms of monetary and scalable development, physical evidence or records deal with previous accomplishments of a person or an organisation.

Surveys or Questionnaires:

Surveys or questionnaires developed using online survey tools play a critical role in the online gathering of either quantitative or qualitative data. The surveys are structured to legitimise the respondents' actions and confidence in a manner. More frequently, the majority of quantitative surveys are made up of checklists and rating scale types of questions as it helps to simplify and measure the participants' attitude or actions. Web based questionnaire or mail questionnaire can be used for this method (Brians et al., 2011).

Web based questionnaire is one of the most trusted and reliable approaches for internet-based analysis or online studies. Participants receive an email, including the survey link in a web-based questionnaire. When they click on the link, which takes the participant to a safe online survey tool, participants can get access to the survey and complete the survey questionnaire. Web-based surveys are more popular with researchers as they are cost-effective, faster, and have a wider reach. A web-based questionnaire's primary advantage is flexibility; respondents are free to use either a desktop, laptop, phone, or smartphone to take the survey in their free time (Babbie, 2010).

The survey is mailed out to a host of the target group in a mail questionnaire, allowing the researcher to connect with a range of audiences. Usually, the mail questionnaire consists of a box containing a cover page that informs the viewer to the form of study and why it is performed to gather data online along with a prepaid return. While the mail questionnaire has a higher churn rate relative to other methods of quantitative data collection, incorporating such advantages such as alerts and survey completion rewards helps to increase the churn rate significantly. All responses are anonymous, and respondents are allowed to take as much time as they would like to complete the survey and be entirely honest about the answer without the fear of bias, one of the major advantages of the mail questionnaire (ibid).

In this quantitative research, survey and questionnaire method was used to collect data. The survey questionnaire was created using online survey tools. The survey link was shared via the link that is https://bathspa.onlinesurveys.ac.uk/determinations-of-financial-literacy-among-young-adults. The link was shared via mail and social media

such as Facebook, Instagram, Twitter in order to collect data from individuals in Bristol and Istanbul.

The benefit of this type of data collection is to provide flexibility as participants take the survey whenever they want through their smartphone, computer, laptop or desktop. Also, if at any time participant wish no longer to participate in this project, they have the right to withdraw. Another advantage of online survey is cost effective and faster. The researcher can reach a wide range of group within a specific time period. Figure 12 represents the survey map of the study.

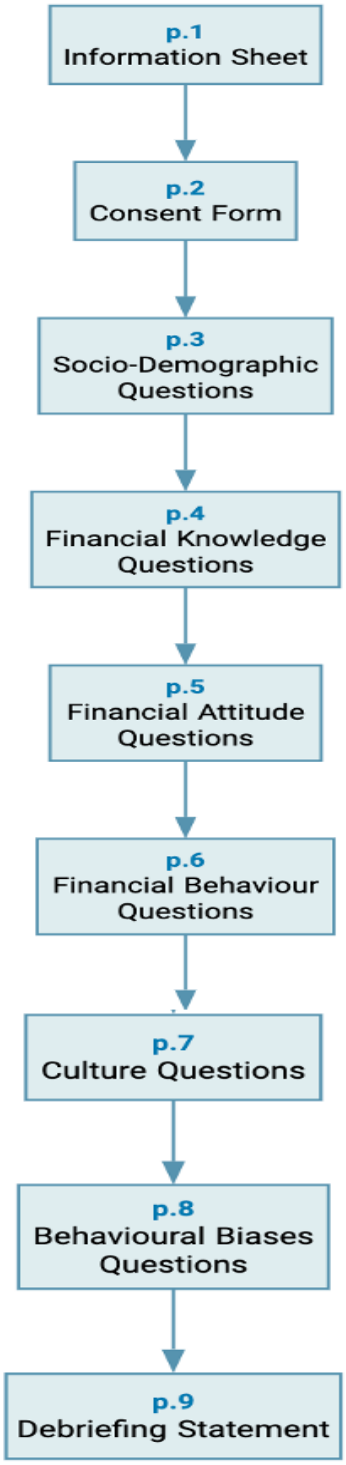


Figure 12: Survey Map

The research was introduced to participants in the information page. Participant consent was taken in the consent page. Unique response number was given to them. At the end of the survey, the debriefing statement was provided to participants.

4.6.3. Data Collection and Target Group

This research sets out to investigate the determination of financial literacy and behavioural biases in the 18–29 age groups – young adults in Bristol and Istanbul. An online survey was created before data collection. Also, ethical consideration was taken before the circulation of the survey. Firstly, the survey was applied to 10 young adults in Bristol as a pilot study to check the understanding of questionnaires. Questionnaires were printed out and distributed to participants. They were asked to indicate the questions in case of misunderstanding. All participants understood all the questions; thus, the questionnaires were used as it is. A pilot study has not been done in Istanbul because the survey was written and data was collected in English, and there was not an issue in Bristol about the questionnaires. Therefore, the second pilot study in Istanbul was not required.

The online survey link with a brief explanation was shared via social media such as Facebook, Linkedln, Instagram, Twitter, WhatsApp and email. The survey link was pinned to the main social media profile, and it was regularly re-post on all social media accounts every week. The incentives have not been offered. The data has been collected on social media because there were over 3,000 followers. In addition to this, some of the data was gathered via private corporational business email address because the researcher was working in the private sector, and the company had roughly 2,000 employees in Bristol. Ex-colleagues were asked to help with data collection in Istanbul, and the online link was sent to their email address.

Participants have read a brief note that was a short invitation paragraph before clicking the provided online link. When they click the link, they have confronted with an explanatory paragraph about the research. The paragraph has involved a definition of financial literacy and behavioural biases, the importance of this research and an explanation of why this research has been conducted. Participants rights were declared, and their consent was taken before the survey. A unique response number was given to participants rather than taken participants name or any personal information. Also, there was no time restriction for the completion of the survey, and they were able to take a break during completion of the survey.

415 young adults from Bristol, UK, and Istanbul answered the survey, and 403 out of 415 surveys received were accepted for the research. Only 2 surveys did not indicate their city, but their surveys were accepted for the research as the rest of the sections in their surveys were completed successfully. Their answers were used to analyse general results which generated the combining participants' answers from Bristol and Istanbul. Their answers have not been taken into account to examine for Bristol and Istanbul. 12 surveys were not completed, and essential answers for classification in socio-demographic questions were not given. Table 3 highlights the participants' demographic variables.

Table 3: Participants' Demographic Variables

Participants		Bristol, UK	Istanbul	TOTAL	
Gender	Male	101	86	187	401
	Female	102	112	214	
Education	Post-graduate education or equivalent (e.g. master's degree, PhD or advanced professional training)	38	44	82	401
	University-level education (e.g. degree or higher-level vocational training)	139	135	274	
	Upper secondary school or high school	25	18	43	
	Lower secondary school or middle school (where relevant)	1	1	2	
Marital Status	Single	118	112	230	401
	Married	83	86	169	
	Divorced	-	-	0	
	Blank	2	-	2	
Employment	In paid employment (work for someone else)	140	142	282	401
	Self-employed (work yourself)	16	8	24	
	Student	42	47	89	
	Unable to work due to sickness or ill-health	5	-	5	
	Unemployed	-	1	1	
Income	£0 p.a. - £9,999 p.a.	45	45	90	401
	£10,000 p.a. - £19,999 p.a.	10	18	28	
	£20,000 p.a. – £29,999 p.a.	132	110	242	
	£30,000 p.a. – £39,999 p.a.	11	11	22	
	£40,000 p.a. – £59,999 p.a.	4	10	14	
	+£60,000 p.a.	1	4	5	

Table 3 indicates that the survey is more completed by females. The majority of the participants have a university level education. Also, most of them are single. Lastly, they are working, and their income level is between £20000 and £29999.

According to the Bristol City Council Report (2018), Bristol has played an important role in the UK economy, being the eighth most significant contributor. Investors generally prefer Bristol for investment, and it is rated first among the English Core Cities (Economic Brief of Bristol Report, 2018). According to the Turkey Statistical

Institution (2018), 40% of Turkey's GDP has been generated by Istanbul, and it is the biggest city in Turkey.

Young adults have been selected for this research as 21.6% of Bristol's population, and 34.2% of Istanbul's population is composed of young adults aged 18 to 29. This makes the young adult percentage higher compared to the overall populations (Bristol City Council, 2018 and Turkey Statistical Institution, 2018). Hence, young adults' financial decisions have a greater effect on the overall economy of Bristol and Istanbul than other age groups. The future of the financial situation and existing financial goods and services such as pensions, investments, savings, credit, mortgages and insurance are influenced by the financial decisions of young adults. At the end of the research, cultural and socio-demographic effects on financial literacy and behavioural biases were also revealed.

Low levels of financial literacy increase the possibility of individuals being under the influence of behavioural biases when making financial decisions. Additionally, this research investigates to what extent young adults with a low level of financial literacy are exposed to behavioural biases. This demonstrated how young adults avoid behavioural biases to make good financial decisions.

4.6.4. Data Analysis

Financial literacy and behavioural biases questionnaires were used to collect the information. The research methodology of the study is in three parts. In the first part, the financial literacy levels of young adults in Bristol and Istanbul were measured by using the survey method. In the second part, the behavioural biases levels of young adults in Bristol and Istanbul were measured. In the third part, ANOVA analysis was used to explain the relationship between financial literacy and behavioural biases.

Financial knowledge, financial behaviour, financial attitude, socio-demographics and culture questions were used to measure financial literacy and fifteen behavioural biases were used to measure behavioural biases score:

Financial Knowledge

The OECD's (2015) financial knowledge scale was used in this research. The financial knowledge questions involve the topics of division, time value of money, interest paid on a loan, calculation of interest plus principal, compound interest, risk and return, the definition of inflation and diversification. In the literature, these topics are commonly used to measure financial knowledge scores of individuals (Bucher-Koenen and Ziegelmeyer, 2011; Knoll and Houts, 2012; Cameron *et al.*, 2014; OECD, 2015; Chen and Lemieux, 2016; Aksoylu *et a.l*, 2017). The financial knowledge score was computed as the number of correct responses to the financial knowledge questions. Normally, participants were asked nine financial knowledge subjects, but one of them was related to their self-assessed financial knowledge in order to assess their perceived financial knowledge. As a result of this, the self-assessment financial knowledge question was not considered when calculating the financial literacy score. It was used for comparison purposes only. Table 4 represents the computing of financial knowledge score.

Table 4: Computing of Financial Knowledge Score

Topics	Questionnaire Type	Assessment
Division	Open-ended Questions	1 point was given for correct answer, 0 in all other cases.
Time Value of Money	Multiple Selections	1 point was given for correct answer, 0 in all other cases.
Interest paid on loan	Open-ended Questions	1 point was given for correct answer, 0 in all other cases.
Calculation of interest plus principle	Open-ended Questions	1 point was given for correct answer, 0 in all other cases.
Compound interest	Open-ended Questions	1 point was given for correct answer, 0 in all other cases.
Risk and return	True/False Questions	1 point was given for correct answer, 0 in all other cases.
Definition of inflation	True/False Questions	1 point was given for correct answer, 0 in all other cases.
Diversification	True/False Questions	1 point was given for correct answer, 0 in all other cases.

Financial Behaviour

The OECD's (2015) financial behaviour scales was used to compute financial behaviour scores. The financial behaviour includes consideration of purchases, timely bill payment, keeping watch of financial affairs, long-term financial goal setting, taking responsibility and making a household budget, active saving, choosing financial products and borrowing. These topics are the most common topics in the literature (Capuano and Ramsey, 2011; PACFC, 2012; Garcia, 2013; Atkinson and Messy, 2014; OECD, 2015; Alkaya and Yagli, 2015; Chen and Lemieux, 2016). Normally, participants were asked about eight financial behaviour questions. Participants could

choose more than one answer for questions six and seven (see Appendix), with each option awarded one point. Table 5 shows the computing of financial behaviour score.

Table 5: Computing of Financial Behvaiour Score

Topics	Questionnaire Type	Assessment
Considered purchase	Five-point Likert type scale	1 point was given for respondents who put themselves at 4 or 5 on the scale (aggree), 0 in all other cases.
Timely bill payment	Five-point Likert type scale	1 point was given for respondents who put themselves at 4 or 5 on the scale (aggree), 0 in all other cases.
Keeping watch of financial affairs	Five-point Likert type scale	1 point was given for respondents who put themselves at 4 or 5 on the scale (aggree), 0 in all other cases.
Long term financial goal setting	Five-point Likert type scale	1 point was given for respondents who put themselves at 4 or 5 on the scale (aggree), 0 in all other cases.
Take a decision about money	Yes/No Questions	1 point was given for yes answer, 0 in all other cases.
Active saving	Multiple Selections	1 point was given for correct answer, 0 in all other cases.
Choosing products	Multiple Selections	1 point was given for correct answer, 0 in all other cases.
Borrowing to make ends meet	Multiple Selections	1 point was given for correct answer, 0 in all other cases.

Financial Attitude

The financial attitude questions are related to the opinion of the individuals about money. The OECD's (2015) financial attitude scale was used the measure financial attitude scores. The financial attitude score was compute based on three statements. According to OECD (2015), it is the sum of the values for the tree statements and then

divided by three. Therefore the score is between 1 and 5. Lower points indicate a short-term financial plan, while higher points indicate a long-term financial plan (Angela *et al.*, 2009; PACFC, 2012; OECD, 2015; Erner, 2016; Chen and Lemieux, 2016; Vijayvargy and Bakhshi, 2018). Table 6 represents the computing of financial attitudes score.

Table 6: Computing of Financial Attitudes Score

Attitude	Assessment
I tend to live for today and let tomorrow take care of itself	Average value = Sum of the values for three statements / 3
I find it more satisfying to spend money than to save it for the long term	
Money is there to be spent	

Culture

The OECD's (2015) culture scale was used to measure culture score. The culture questions cover the risk, time, norm, freedom and social prestige. These topics are the most common topics in the literature (Xu and Zia, 2012; Cameron *et al*., 2014; Potrich *et al*., 2015; OECD, 2015). Table 7 indicates the computing of culture score.

Table 7: Computing of Culture Score

Topics	Questionnaire Type	Assessment
The Risk	Five-point Likert type scale	1 point was given for respondents who put themselves at 4 or 5 on the scale (aggree), 0 in all other cases.
Time	Five-point Likert type scale	1 point was given for respondents who put themselves at 4 or 5 on the scale (aggree), 0 in all other cases.
Norm	Five-point Likert type scale	1 point was given for respondents who put themselves at 4 or 5 on the scale (aggree), 0 in all other cases.

Freedom	Five-point Likert type scale	1 point was given for respondents who put themselves at 4 or 5 on the scale (aggree), 0 in all other cases.
Social Prestige	Five-point Likert type scale	1 point was given for respondents who put themselves at 4 or 5 on the scale (aggree), 0 in all other cases.

To sum up, the overall financial literacy scores were obtained as the sum of all scores. It was also calculated as a percentage to reveal the financial literacy level of young adults. Financial literacy is the combination of financial knowledge, financial behaviour, financial attitude (Angela *et al*., 2009; PACFC, 2012; OECD, 2015; Erner, 2016; Chen and Lemieux, 2016; Vijayvargy and Bakhshi, 2018), cultural and socio-demographic aspects (Xu and Zia, 2012; Cameron *et al*., 2014; Potrich *et al*., 2015).

Behavioural Biases

Montier's (2007) simplified behavioural biases scale was used to compute the behavioural biases score of young adults. Behavioural biases questions cover representativeness, confirmation, hindsight, self-attribution, anchoring, conservatism, over-optimism, availability, cognitive dissonance, framing, illusion of knowledge, illusion of control, categorisation, loss aversion and overconfidence. These topics are common behavioural biases topics among researchers (Kahneman and Tversky, 1981; Nofsinger, 2002; Pompian, 2006; Montier, 2007; Ozan, 2010). Two statements were asked to participants in order to compute the behavioural biases score. The average of the two statements was calculated. The behavioural biases score was computed as the sum of all average scores of the topics. Table 8 shows the computing of behavioural biases score.

Table 8: Computing of Behavioural Biases Score

Topics	Questionnaire Type	Assessment
Representativeness	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Confirmation	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Hindsight	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Self Attribution	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Anchoring	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Conservatism	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Over Optimism	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level

		behavioural biases). Average of the statements was computed.
Availability	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Cognitive Dissonance	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Framing	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Illisuin Of Knowledge	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Illusion Of Control	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Categorisation	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.
Loss Aversion	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.

Overconfidence	Five-point Likert type scale	The higher points indicates high level behavioural biases (1-low level of behavioural; biases while 5-high level behavioural biases). Average of the statements was computed.

The relationship between the financial literacy level and behavioural biases was examined by ANOVA analyses to reveal the extent, if any, of influences between financial literacy and behavioural biases. ANOVA analysis is used when it is desired to compare a numerical variable with at least three different variables (Saunders *et al*., 2009). The collected data in this study were converted into numerical values. The behavioural biases of young adults in Bristol and Istanbul are compared with four different variables including, financial knowledge, financial behaviour, financial attitude and culture. Therefore, ANOVA analysis was used for this study. Positivism approach was used to investigate the answer of this research question because the statistical method, which was ANOVA analysis, was used.

4.7. Reliability and Validity

Reliability and validity are important two factors for researches. In this section, the reliability of the research and validity of the research are discussed.

Validity is described as the degree to which a definition in quantitative analysis is measured accurately. For instance, a survey aimed at exploring financial literacy but which actually only measures financial knowledge, would not be considered valid. In quantitative research, the second indicator of quality is reliability or an instrument's accuracy. In other words, the degree to which a research technique reliably has the same outcomes if it is used frequently in the same circumstance. The aim of the reliability is to minimise bias and errors (Heale and Twycross, 2015).

The quality of empirical study can be measured by performing four basic factors, according to Yin (2003). They are construct validity, internal validity, external validity and reliability.

Construct validity is the general ability of the measure to measure the construct of interest and is investigated in a number of ways, mainly by combining the results of all other types of validity (Strauss and Smith, 2009). In order to ensure the validity of the construct, a theoretical framework was established in this research after carefully examining and evaluating the available literature as the guideline for processing the empirical study. The survey method was chosen as the data collection techniques after comparison and examination of various research approaches and research methods. Adequate coverage of all content related to financial illiteracy and behavioural biases have been tried to cover. There was no common questionnaire in the field conducted before 2011 in order to measure financial literacy. Therefore, it was very difficult to compare the results found by the researchers because different questionnaires were used for different target groups to assess their financial literacy level. However, in 2011, the OECD and the International Financial Education Network (INFE) developed a basic financial literacy survey to measure financial literacy. This developed survey covers financial knowledge, financial behaviour and financial attitude, which are the main components of financial literacy. It has also been accepted by many researchers (Atkinson and Messy, 2014; Chen and Lemieux, 2016; Aksoylu et a.l, 2017; Vijayvargy and Bakhshi, 2018). Also, since the financial literacy level of different groups is measured by the same survey questions, it is easier to compare the results.

In this study, the questionnaire used to measure financial literacy developed by OECD and INFE (2011) was based. This questionnaire was designed for young adults in

Bristol and Istanbul. At the same time, cultural questions have been added to the questionnaire and made more comprehensive. There are not enough studies in the literature examining the relationship between financial literacy and behavioural biases. The studies in the literature generally use the behavioural bias classification developed by Hirshleifer (2001). However, this classification is quite complicated. Hence, Montier (2007) has simplified this classification. In this study, Hirshleifer (2001) and Montier's (2007) studies were based on behavioural biases.

Internal validity only covers causal or explanatory research, according to Yin (2003), where a researcher is trying to decide whether an event contributed to another event. Internal validity does not apply to exploratory research that is not focused on making a causal statement. Therefore, this research does not require internal validity, so it should not be taken into account.

External validity addresses the question of whether the results of a study can be generalised (Yin, 2003). In order to provide external validity, firstly, population validity is taken into account. In other words, the question of whether a researcher can apply the findings of the study to a wider context needs to be investigated. A sample size of the population is determined by the formula of;

$$N = \frac{Z\_Score^2 \; x \; \sigma \; x \; (1 - \sigma)}{\varepsilon}$$

(N= sample size, σ= standard deviation, Ɛ= margin of error)

The Margin of Error:

Most of the research contains an error, and it is inevitable. It indicates how much error the researcher is going to allow. This is the plus or minus figure that is sometimes stated with an approximate proportion and is often referred to as the confidence interval.

Confidence Level:

The second step of the determination of the sample size is to identify the confidence level. It deals with how sure the researcher wants to be that the actual mean is within the margin of error. The most common confidence level are 90% (Z_Score: 1.645), 95% (Z_Score: 1.96), and 99% (Z_Score: 2.576). In this research, the confidence level is 95%.

Standard Deviation:

This step asks the researcher to predict how many of the answers researcher receive will be different from each other and the average number. Low standard deviation indicates that all figures are clustered around the mean figure. High standard deviation presents that figures are spread across a much wider range. 0.5 standard deviation is a safe choice in order to make sure the sample size is large enough. The standard deviation of the research is 0.5.

Sample Size:

The sample size consists of this research population. The population of young adults in Bristol and Istanbul is large. The sample size does not change if the real population is greater than 100000.

In this research sample size was determined based on the 95% confidence level, 5% of margin error and 0.5 standard deviations. Also, the real population of young adults

Bristol and Istanbul are greater than 100000. Thus, even if the ideal sample size is 370 for this research, 403 out of 415 surveys were used to generate results.

Reliability is to indicate whether operations of a study can be repeated with the same results. This criteria is not suitable for social sciences due to the human factor. Researchers can not control human behaviour and attitude (Creswell, 2007). In this point, in order to measure the consistency of responses to the questionnaire was used reliability analysis that prepared according to a predetermined scale type. What is meant by consistency here is the consistency of the answers to the questions that contain only ordinal scale answers. For example, reliability analysis is not applied to the questions of the questionnaire with gender, income or yes / no answers. However, for example, with the 5-point Likert scale given to a question giving an opinion about any subject, sortable answers such as from I definitely do not agree (1) to I definitely agree (5) can be subjected to reliability analysis (Saunders *et al*., 2009).

The main analysis used for reliability analysis is to find Cronbach Alpha (α) value. There can be a single α value for each item, or all questions can have an average α value. The α value obtained for all questions indicates the total reliability of that questionnaire and is expected to be greater than 0.7, α values lower than this value indicate that the questionnaire is poor reliability, and α> 0.8 indicates that the questionnaire has high reliability. Reliability of the questionnaire is increased by subtracting, which α value of these questions decreases the α value obtained in total (Yin, 2003). The classification of reliability categories is shown in Table 10.

Table 9: The Classification of Reliability Categories

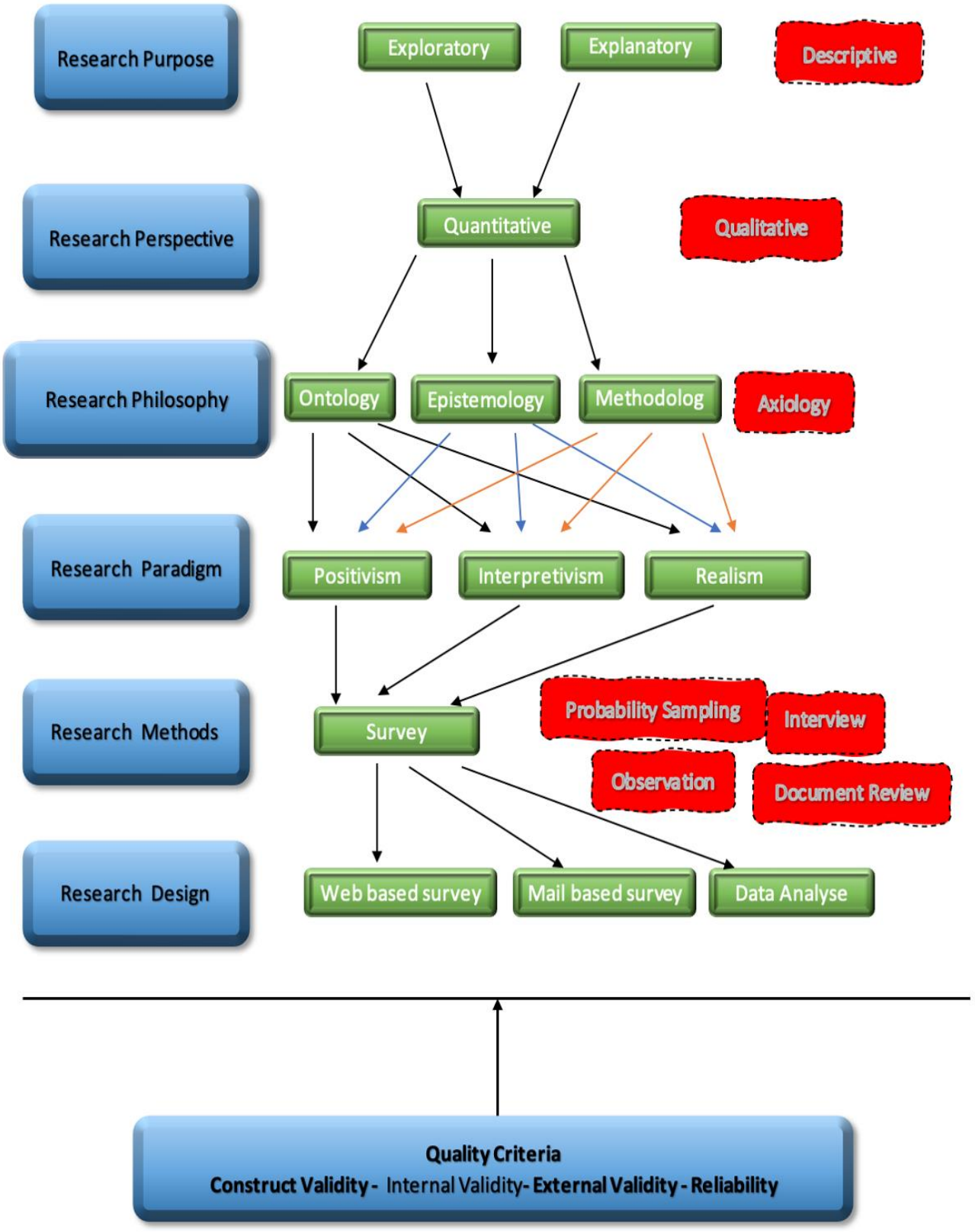
Cronbach's Alpha	Reliability
α ≥ .9	Excellent
.9 > α ≥ .8	Good
.8 > α ≥ .7	Acceptable
.7 > α ≥ .6	Questionable
.6 > α ≥ .5	Poor
.5 > α	Unacceptable

Source: (Yin, 2003)

4.8. Summary

This study adopts exploratory research to figure out SRQ1, SRQ2 and SRQ3. Also, explanatory research is conducted to find out the SRQ4. In this point, it is investigated how does one factor, which is culture influence others which are financial literacy and behavioural biases. Quantitative research method from heavily positivism paradigm is applied to this research. In this context, the research problem is investigated by using statistical analysis and hypothesis are tested. The online survey method is selected as a quantitative research data collection method. Online survey link is created and shared via email and social media. The same survey questionnaire is used for all participants from Bristol and Istanbul.

A summary of the methodology framework is presented in Figure 14 in order to give a general idea of the research methodology in this research.



Note: Green clour shows selected method while red colour indicates not selected.

Figure 13: Methodology Framework

Chapter Five: Data Presentation and Analysis

Overview

Available literature review, theoretical framework and research methodology have been discussed in the previous chapters. In this chapter, empirical data is presented and analysed. Based on sub-research questions, firstly, financial literacy score and level are discussed for Bristol, Istanbul and all population. In this point, the answer to sub-research question three is obtained. Secondly, the behavioural biases score and level are presented for these three groups. Thus, the answer to sub-research question two is presented. Lastly, the relationship between financial literacy and behavioural biases is analysed statistically for Bristol, Istanbul and all target group. In connection with this, sub-research question one and four are investigated.

5.1. Reliability Statistics

The research was conducted using the survey method. 415 young adults completed the survey. Twelve of the participants' answers are invalid as some of them did not complete the survey in full, and the consent page was not completed. As a result of this, 403 participants' answers were accepted to generate the results of the study.

In the demographic variables section (Xu and Zia, 2012; Cameron *et al*., 2014; Potrich *et al*., 2015; OECD, 2015), personal questions were asked of participants in Bristol and Istanbul. Participants were also asked financial knowledge self-assessment questions to understand their thoughts about financial knowledge. In the following section, financial knowledge (Bucher-Koenen and Ziegelmeyer, 2011; Knoll and Houts, 2012; Cameron *et al.*, 2014; OECD, 2015; Chen and Lemieux, 2016; Aksoylu *et al.*, 2017), financial attitude (Angela *et al.*, 2009; PACFC, 2012; OECD, 2015; Erner,

2016; Chen and Lemieux, 2016; Vijayvargy and Bakhshi, 2018), financial behaviour (Capuano and Ramsey, 2011; PACFC, 2012; Garcia, 2013; Atkinson and Messy, 2014; OECD, 2015; Alkaya and Yagli, 2015; Chen and Lemieux, 2016), culture (Xu and Zia, 2012; Cameron *et al*., 2014; Potrich *et al*., 2015; OECD, 2015) and behavioural biases (Kahneman and Tversky, 1981; Nofsinger, 2002; Pompian 2006; Montier 2007; Ozan 2010) questions were asked to participants.

If Cronbach's Alpha is between 0.8 and 0.9, the reliability of research is accepted as good (Kalayci, 2010), and if it is between 0.7 and 0.8, the reliability is acceptable (Yin, 2003). Table 10 shows the reliability statistics for financial knowledge, financial behaviour, financial attitude, culture, behavioural biases and all survey.

Table 10: Raliability Statistics

Variables	Cronbach's Alpha	N of Items
Financial Knowledge	0.715	8
Financial Behaviour	0.753	8
Financial Attitude	0.773	3
Culture	0.710	10
Behavioural Biases	0.851	22
All Survey	0.835	51

According to Table 10, the reliability of all survey and the behavioural biases are good because Cronbach's Alpha coefficient is 0.835 and 0.851, respectively. The reliability of the financial knowledge (0.715), financial behaviour (0.753), financial attitude (0.773) and culture (0.710) are acceptable due to their Cronbach's Alpha coefficients are between 0.7 and 0.8.

The details of the results were discussed in the following sections.

5.2. Analysis of Demographic Data

In this section, demographic variables for Bristol, Istanbul and all population is discussed.

5.2.1. General

The summary statistics are provided for participants in Bristol and Istanbul. Table 12 indicates the number of observations and the percentage of participants regarding cities.

Table 11: Descriptive Statistics by Cities

Demographic Variables	Frequency	Percentage	Total
Bristol	203	50.4%	403
Istanbul	198	49.1%	
Blank	2	0.5%	

According to Table 12, this survey of 403 out of 415 participants is valid. Only two participants (0.5%) did not indicate their city in the survey, but their results were used for general analysis as all data collected, except the participants' city, was used in the general analysis. 50.4% (203) of the participants live in Bristol, while 49.1% (198) of the participants live in Istanbul. The participant numbers for both cities are close. Therefore, their results can be compared easily.

Table 13 shows the descriptive statistics of young individuals in terms of gender in both cities.

Table 12: Descriptive Statistics by Gender

Demographic Variables	Frequency	Percentage	Total
Male	187	46.4%	403
Female	216	53.6%	

53.6% (187) of young individuals are female, while 46.4% (216) of young individuals are male. The survey was mostly completed by female participants.

Table 14 shows information about the participants' education status.

Table 13: Descriptive Statistics by Education

Demographic Variables	Frequency	Percentage	Total
Lower secondary school or middle school (where relevant)	2	0.5%	403
Postgraduate education or equivalent (e.g. master's degree, PhD or advanced professional training)	84	20.8%	
University-level education (e.g. degree or higher-level vocational training)	274	68.0%	
Upper secondary school or high school	43	10.7%	

As Table 14 illustrates, the majority of survey participants were university-level educated (68%). 20.8% of the participants were educated to postgraduate level, and 10.7% of the participants had an upper secondary school or high school education level. Only 0.5% of the participants had a lower secondary school or middle school education level. In summary, 88.8% of those who responded to the survey indicated that their education status was at university or postgraduate level.

Table 15 describes the marital status of participants in Bristol and Istanbul.

Table 14: Descriptive Statistics by Marital Status

Demographic Variables	Frequency	Percentage	Total
Single	231	57.3%	403
Married	169	41.9%	
Divorced	1	0.2%	
No Data	2	0.5%	

According to Table 15, 231 participants (57.3%) are single, while 169 participants (41.9%) are married. Only one participant (0.2%) is divorced. However, two participants (0.5%) did not indicate their marital status.

Table 16 illustrates the participants' working status in general.

Table 15: Descriptive Statistics by Work Status

Demographic Variables	Frequency	Percentage	Total
In paid employment (work for someone else)	283	70.2%	403
Self-employed (work yourself)	24	6.0%	
Student	90	22.3%	
Unable to work due to sickness or ill-health	1	0.2%	
Unemployed	5	1.2%	

As Table 16 shows, the majority of the participants (70.2%) are in paid employment. 22.3% of the participants are students, while 6.0% of the participants are self-employed. However, 1.2% of the participants are unemployed, and 0.2% of the participants are unable to work due to sickness or ill-health. In summary, 92.5% of those who answered the survey are in paid employment or students.

Table 17 shows the income level of the participants in Bristol and Istanbul.

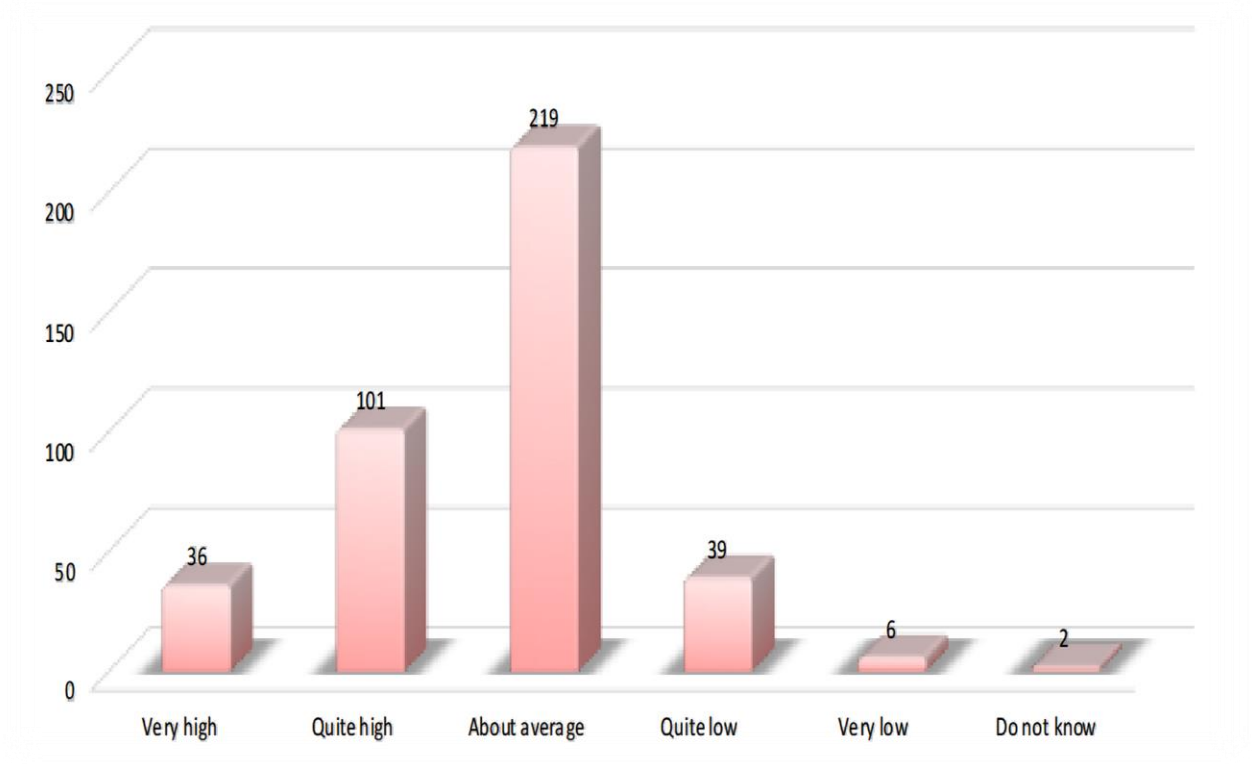
Table 16: Descriptive Statistics by Income

Demographic Variables (£)	Frequency	Percentage	Total
0 – 9999	90	22.3%	403
10000 – 19999	29	7.2%	
20000 – 29999	243	60.3%	
30000 – 39999	22	5.5%	
40000 – 59999	14	3.5%	
60000+	5	1.2%	

According to Table 17, 60.3% of the participants earn between £20,000 and £29,999. 22.3% of the participants' income level is between £0 and £9,999. A minority of the participants (1.2%) earn £60,000+. However, 7.2% of the participants' income level is between £10,000 and £19,999, while 5.5% of the participants earn between £30,000 and 39,999 and 3.5% of the participants' income level is between £40,000 and £59,999. In summary, the demographic statistics show that the majority of the participants' income level is between £0 and £29,999 (82.6%). This reflects their previously noted employment or student status from Table 10 (92.5%).

Table 18 illustrates participants' financial knowledge by their self-assessment.

Table 17: Distribution of Financial Knowledge Self-Assessment



According to Table 18, 54.3% of the participants think that their financial knowledge is about average, while 25.1% of the participants believe that their financial knowledge is quite high. 9.7% of the participants assessed their financial knowledge as very high, and 8.9% of them consider their financial knowledge as quite low. 1.5% of the participants indicate their financial knowledge is very low, and 0.5% of them have not got any idea about their financial knowledge. In summary, the majority of the participants (88.3%) assessed their financial knowledge as about average or above.

Participants were generally asked about concepts such as compound interest, inflation, time value of money, bonds and stocks and risk diversification in order to measure their financial literacy level (OECD, 2015). In addition to this, perceived financial knowledge is as important as financial literacy (Pudlo and Gavurova, 2012). If the perceived financial knowledge is higher than the financial literacy level of

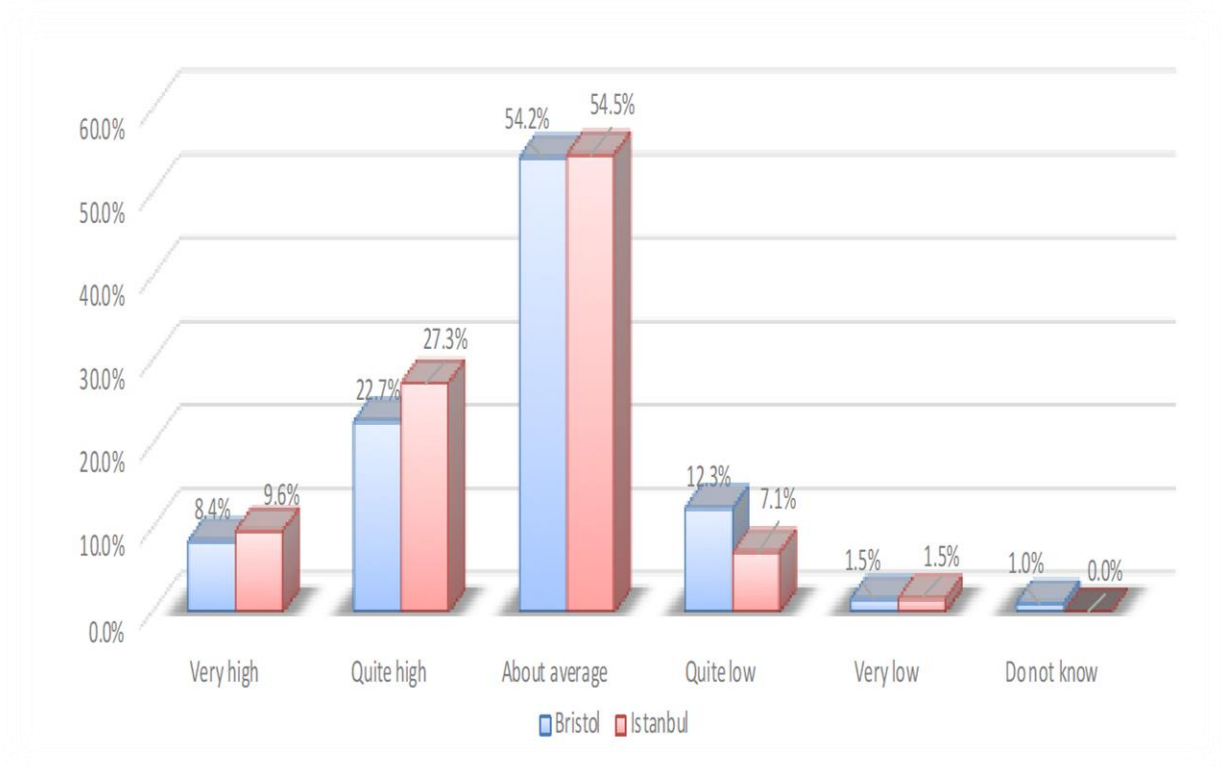
individuals, it causes individuals to behave more risky. If individuals perceived financial knowledge is higher, but the actual financial literacy level is lower, individuals might have overconfidence. According to Allgood and Walstad (2016), these kinds of individuals intend to believe that they have the ability to forecast situations. Even if there is a low probability of getting success in the financial markets, they are overconfident about their predictions. At the same time, investments, savings, retirement plans and debt management are affected by this situation (Leonard, 2012).

Perceived financial knowledge among young adults in Bristol and Istanbul is average. It means that young adults in Bristol and Istanbul are more likely to take an average risk. Also, perceived financial knowledge is a strong indicator of saving behaviour, and there is a positive relationship between them (Henager and Mauldin, 2015). According to this result, young adults' saving behaviour is average level. Saving behaviour of young adults should be improved to gain welfare in the future (Leonard, 2012).

At the same time, if there is any inconsistency between perceived financial knowledge and financial literacy, this indicates that individuals do not have an awareness of their need for financial education (Agnew and Szykman, 2005). If the perceived financial information is more than the level of financial literacy, individuals may not feel the need to improve themselves. Therefore, it will be difficult for financial education to achieve its purpose. Young adults in Bristol and Istanbul are more likely to increase their financial knowledge through financial education because they realize their average financial knowledge.

In order the understand cultural factors on perceived financial knowledge, this result was compared by city. Table 19 indicates participants' financial knowledge self-assessment by each city.

Table 18: The Comparison of the Distribution of Financial Knowledge Self-Assessment



As Table 19 shows, the participants in Istanbul think that they have more financial knowledge than do the participants in Bristol. Although the participants in Bristol and Istanbul who believe that their financial knowledge is about average, are quite close in each city, the percentage of participants in Istanbul who consider that they have quite high and very high financial knowledge is greater than the percentage of participants in Bristol. Also, the percentage of participants in Bristol who believe that their financial knowledge is quite low is greater than the percentage of participants in Istanbul. 1.5% of the participants in Bristol and Istanbul assessed their financial knowledge as very low. 1.0% of the participants in Bristol do not know about their financial knowledge, while all participants do have an idea about their level of financial knowledge in Istanbul.

In summary, the perceived financial knowledge of young adults in Istanbul is slightly higher in Bristol. Young adults who think that they have a high level of financial knowledge in Bristol is less than Istanbul while young adults who think that they have a low level of financial knowledge in Istanbul is less than Bristol. It means that young adults in Istanbul may behave more risky in Bristol (Henager and Mauldin, 2015), but their saving behaviour may be better than Bristol (Leonard, 2012). For this reason, especially young adults in Istanbul need a certain level of financial literacy in order to manage their risks more effectively.

Young adults in Bristol are more aware of the need for financial education when compared to those in Istanbul. Because more young adults in Bristol think that they have a low level of financial knowledge, it can be said that culture affects the perceived financial literacy level of young adults, even if it is not too much. According to OECD (2015) study, the financial literacy level of UK and Turkey is quite close to each other. This means that financial literacy is a very important topic for developed countries besides developing ones. This study shows that their perceived financial literacy level is quite close to each other, too irrespective of developing level.

Demographic variables will be discussed by cities in the following section.

5.2.2. Bristol, UK

Demographic variables for Bristol will be examined in this section. Table 120 indicates participants' gender in Bristol.

Table 19: Descriptive Statistics by Gender in Bristol, UK

Demographic Variables	Frequency	Percentage	Total
Male	101	49.8%	203
Female	102	50.2%	

The survey was answered by 203 young adults in Bristol. According to Table 20, the gender distribution of the participants in Bristol is almost equal. It can be seen that 50.2% of the participants are female, while 49.8% of the participants are male.

Table 21 illustrates the participants' education level.

Table 20: Descriptive Statistics by Education in Bristol, UK

Demographic Variables	Frequency	Percentage	Total
Postgraduate education or equivalent (e.g. master's degree, PhD or advanced professional training)	38	18.7%	203
University-level education (e.g. degree or higher level vocational training)	139	68.5%	
Upper secondary school or high school	25	12.3%	
Lower secondary school or middle school (where relevant)	1	0.5%	

Table 21 shows that the majority of the participants (87.2%) are educated to postgraduate or university level. 25 of the participants (12.3%) who are educated to upper secondary school or high school level have responded to the survey, while 0.5% of participants in Bristol are educated to lower secondary school or middle school level.

Another demographic variable is the participants' marital status, shown in Table 22.

Table 21: Descriptive Statistics by Marital Status in Bristol, UK

Demographic Variables	Frequency	Percentage	Total
Single	118	58.1%	203
Married	83	40.9%	
No Data	2	1.0%	

58.1% of participants in Bristol are single, and 40.9% of participants in Bristol are married. Two participants (0.5%) did not answer the marital status question.

Table 23 shows the working status of participants in Bristol.

Table 22: Descriptive Statistics by Work Status in Bristol, UK

Demographic Variables	Frequency	Percentage	Total
In paid employment (work for someone else)	140	69.0%	203
Self-employed (work yourself)	16	7.9%	
Student	42	20.7%	
Unemployed	5	2.5%	

Table 23 shows that 69.0% of those who responded to the survey are working for somebody else in Bristol, while the percentage of students is 20.7%. 7.9% of the participants are self-employed, while 2.5% of the participants are unemployed. It can be clearly seen that the majority of the participants (89.7%) are either working for someone else or are students.

The young individuals' income level in Bristol is shown in Table 24.

Table 23: Descriptive Statistics by Income in Bristol, UK

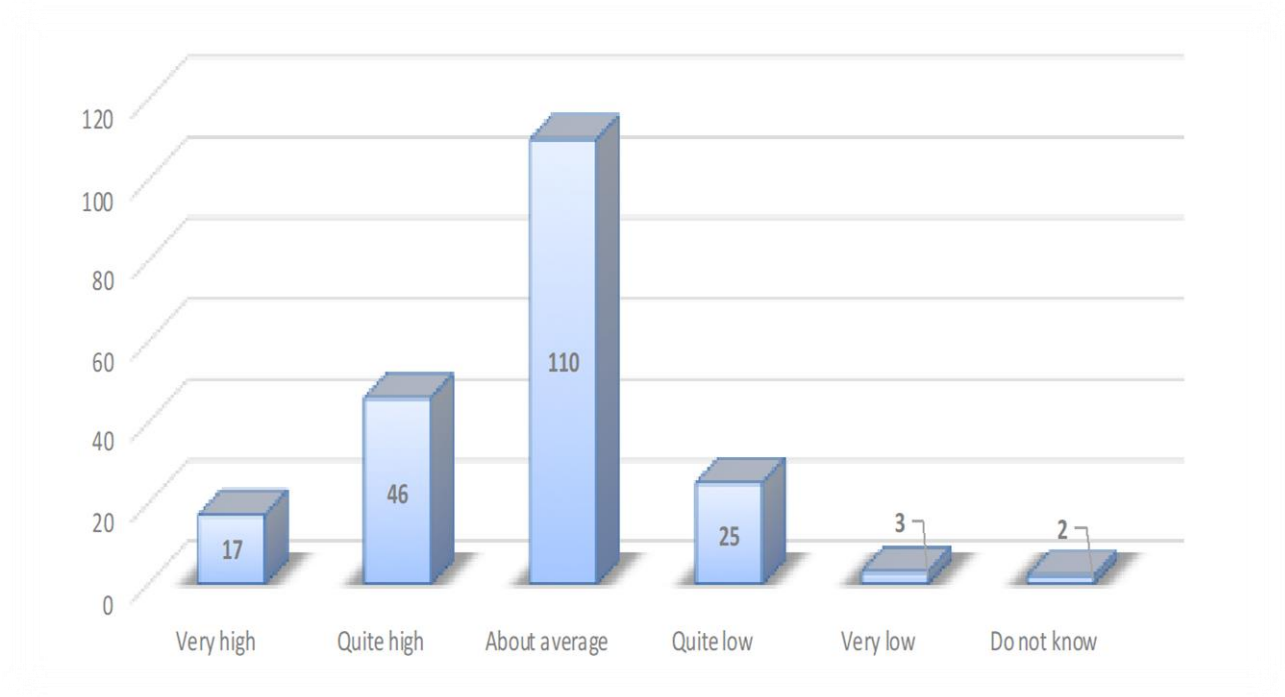
Demographic Variables (£)	Frequency	Percentage	Total
0-9999	45	22.2%	203
10000 – 19999	10	4.9%	
20000 – 29999	132	65.0%	
30000 – 39999	11	5.4%	
40000 – 59999	4	2.0%	
60000+	1	0.5%	

According to Table 24, the majority of participants have an income level of between £20,000 and £29,999, while a minority of participants' income level is £60,000+. The percentage of participants who earn between £0 and £9,999 is 22.2%. eleven participants (5.4%) earn between £30,000 and £39,999 while four (2.0%) earn between £40,000 and £59,999.

In summary, the percentage of female (50.2%) and male (49.8%) participants is almost equal. 87.2% of the participants in Bristol are educated to university or postgraduate level. 58.1% of the participants are single. The majority of the participants work for someone else (69%), or they are students (20.7%). The majority have income levels of between £0–£9,999 (22.2%) and £20,000–£29,999 (65%).

Table 25 reveals the result of the financial knowledge self-assessment among young individuals in Bristol.

Table 24: Distribution of Financial Knowledge Self-Assessment in Bristol, UK



According to Table 25, 54.2% of the participants think that they have average financial knowledge. The percentage of participants who think their financial knowledge is quite high is 22.7% and 12.3% of the participants assessed their financial knowledge as quite low. 8.4% of the participants consider that they have very high financial knowledge. However, 1.5% of participants indicate that their financial knowledge is very low. Only 1.0% of the participants have no idea about their financial knowledge level. It can clearly be seen that 85.3% of participants think that they have an average, or higher, level of financial knowledge.

In summary, the perceived financial knowledge of young adults in Bristol is average. Generally, they have financial knowledge about basic financial issues, but they do not have enough knowledge about complex financial issues. As a result of this, their risk perception towards a financial decision is moderate (Henager and Mauldin, 2015). In order to increase their perceived financial knowledge, complex financial issues should be taught to them. A good financial education can be enough to increase the financial

knowledge level of young adults in Bristol because they are aware of their shortcomings about financial issues. Also, the savings behaviour of them could be better in the future by increasing perceived financial knowledge (Leonard, 2012).

5.2.3. Istanbul

The demographic variables for participants in Istanbul will be described in this section. The gender of participants in Istanbul is shown in Table 26.

Table 25: Descriptive Statistics by Gender in Istanbul

Demographic Variables	Frequency	Percentage	Total
Male	86	43.4%	198
Female	112	56.6%	

Of the 198 young adults in Istanbul who responded to the survey, 56.6% were female, while 43.4% were male. In other words, the percentage of female participants is greater than the percentage of male participants in Istanbul.

Table 27 represents young individuals' education level in Istanbul.

Table 26: Descriptive Statistics by Education in Istanbul

Demographic Variables	Frequency	Percentage	Total
Postgraduate education or equivalent (e.g. master's degree, PhD or advanced professional training)	44	22.2%	198
University-level education (e.g. degree or higher level vocational training)	135	68.2%	
Upper secondary school or high school	18	9.1%	
Lower secondary school or middle school (where relevant)	1	0.5%	

According to Table 27, the majority of participants in Istanbul are educated to university (68.2%) or postgraduate (22.2%) level. 9.1% of the participants have an upper secondary school or high school education level, while 0.5% of the participants have a lower secondary school or middle school education level.

The participants' marital status is shown in Table 28.

Table 27: Descriptive Statistics by Marital Status in Istanbul

Demographic Variables	Frequency	Percentage	Total
Single	112	56.6%	198
Married	86	43.4%	

As Table 28 shows, 56.6% of the participants in Istanbul are single, and 43.4% of them are married. The number of single participants who answered the survey is greater than the number of married participants.

Table 29 shows the participants' working status in Istanbul.

Table 28: Descriptive Statistics by Work Status in Istanbul

Demographic Variables	Frequency	Percentage	Total
In paid employment (work for someone else)	142	71.7%	198
Self-employed (work yourself)	8	4.0%	
Student	47	23.7%	
Unable to work due to sickness or ill-health	1	0.5%	

Participants in Istanbul who are working for someone else are in the majority, at 71.7%. The percentage of students who responded to the survey is 23.7%. 4.0% of the

participants are self-employed, while 0.5% of the participants are unable to work due to sickness, or ill-health. In summary, 95.4% of the participants are either students or are working for someone else.

The participants' income level in Istanbul is shown in Table 30.

Table 29: Descriptive Statistics by Income in Istanbul

Demographic Variables (£)	Frequency	Percentage	Total
0-9999	45	22.7%	198
10000 – 19999	18	9.1%	
20000 – 29999	110	55.6%	
30000 – 39999	11	5.6%	
40000 – 59999	10	5.1%	
60000+	4	2.0%	

According to Table 30, the participants who earn between £20,000 and £29,999 are at the highest percentage among all participants in Istanbul at 55.6%. 22.7% of the participants earn between £0 and £9,999, while 9.1% of the participants earn between £10,000 and £19,999. The percentages of participants earning between £30,000 and £39,999 and between £40,000 and £59,999 are almost equal, at 5.6% and 5.1% respectively. Only 2.0% of the participants have an income level of £60,000+.

In summary, young females made up the majority of survey respondents in Istanbul, at 56.6% of the participants. 90.4% of the participants have a university or postgraduate education level, and 56.6% of the participants are single. The majority of the participants work for someone else (71.7%), or they are students (23.7%), and their income levels are between £0–£9,999 (22.7%) and £20,000-£29,999 (55.6%).

The financial knowledge self-assessment result of the participants in Istanbul is shown in Table 31.

Table 30: Distribution of Financial Knowledge Self-Assessment in Istanbul

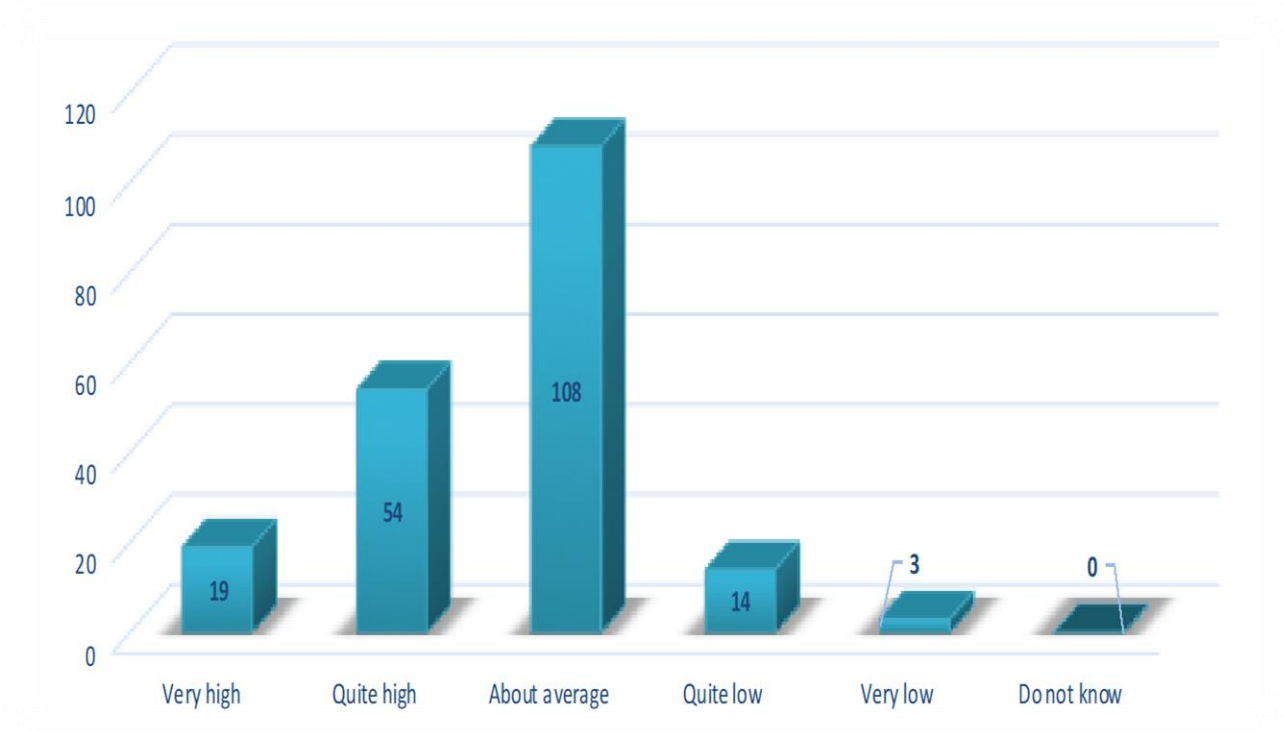


Table 31 shows that 54.5% of the participants in Istanbul think that they have average financial knowledge. 27.3% of the participants assessed their financial knowledge as quite high, while 9.6% of the participants consider their financial knowledge to be very high. The percentage of participants who think they have quite low financial knowledge is 7.1%, but only 1.5% of the participants think that their financial knowledge is very low. Each participant in Istanbul has assessed their financial knowledge level. It can clearly be seen that 91.4% of the participants are of the opinion that they have average, or higher, levels of financial knowledge.

As a summary, perceived financial knowledge of young adults in Istanbul is average. They are aware of their shortcomings about financial issues. More young adults in Istanbul think that they have high financial knowledge than Bristol. As a result of this,

they tend to exhibit more risky behaviour (Henager and Mauldin, 2015). At the same time, young adults in Istanbul are likely to experience a loss of well-being during their retirement (Leonard, 2012). Because the average level of perceived financial knowledge causes young adults to make moderate savings and their retirement plans are not effective. Therefore effective financial education strategy should be developed for them to increase their financial knowledge.

5.3. Structual Equation Modelling

In this study, a structural equation modelling (SEM) was used in order to validate the research model. This approach has been chosen because of its ability to analyse causal relationships between constructs using multiple measurement variables (Blunch, 2012). Furthermore, SEM addresses problems such as path analysis, in which it disregards the reliability of observed variables in favour of treating them as precise substitutes for the constructs they characterize by treating each construct as an underlying variable or factor (Bollen, 2002). SEM is a common statistical technique that combines measurement pattern or confirmatory factor analysis (CFA) with a structural model for simultaneous statistical analysis.

CFA is a technique for determining which variables affect which factors. This technique is referred to as theory testing. Factor analysis, on the other hand, includes exploratory factor analysis (EFA), which seeks to determine whether or not the factors are related. However, it performed without taking into account the large number of variables that currently exist. As a consequence, EFA is used to figure out the relationships between variables or factors, and then multivariate procedures are used to test the relationships. As a result, it represents theory construction rather than theory testing (Blunch, 2012). SEM is best used for hypothesis testing and inferential data

processing. Throughout CFA, it allows for flexibility in modelling relationships between different predictor and benchmark variables, as well as statistically examining a priori hypothetical propositions rather than empirical evidence (Raykov and Marcoulides, 2012).

In this research, EFA is used to create a screening process that allows the researcher to improve and validate the data (Hair et al., 2010). The Statistical Package for the Social Sciences (SPSS) version 24 was used to run the EFA. Table 32 shows the outcomes of the Kaiser-Meyer- Olkin (KMO) and Barlett's Test.

Table 31: KMO and Barlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.762
Bartlett's Test of Sphericity	Approx. Chi-Square	2153.622
	df	253
	Sig.	.000

According to Table 32, the outcomes of the Kaiser-Meyer- Olkin (KMO) was 0.762>0.50. This should be over 0.50 (Burns and Burns, 2008). As a result, the value found reflects that the variables are valid for factor analysis, so factor analysis was performed. In addition to this, Bartlett's Test of Sphericity is 2153.622. This is significant, meaning that at least two variables are associated, and factor analysis should be performed (Hair et al., 2010).

As a result, the researcher used principal component factor analysis in accordance with varimax rotation, as suggested by Hair et al. (2010) and Burns and Burns (2008), in order to produce factors that were linearly independent. The eigenvalues with values greater than 1 were then considered when evaluating the holding paragraphs or products, as shown in Table 33.

Table 32: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.456	19.373	19.373	4.456	19.373	19.373	2.757
2	2.144	9.323	28.696	2.144	9.323	28.696	2.717
3	1.696	7.373	36.068	1.696	7.373	36.068	2.513
4	1.493	6.492	42.560	1.493	6.492	42.560	2.695
5	1.299	5.647	48.207	1.299	5.647	48.207	2.483
6	1.237	5.378	53.584	1.237	5.378	53.584	1.775
7	1.097	4.768	58.352	1.097	4.768	58.352	1.925
8	1.025	4.457	62.809	1.025	4.457	62.809	1.802
9	.929	4.037	66.847				
10	.838	3.643	70.489				
11	.781	3.395	73.884				
12	.720	3.130	77.014				
13	.699	3.040	80.054				
14	.667	2.899	82.953				
15	.593	2.580	85.533				
16	.527	2.293	87.826				
17	.491	2.136	89.962				
18	.483	2.100	92.062				
19	.415	1.805	93.867				
20	.403	1.751	95.618				
21	.377	1.640	97.259				
22	.354	1.541	98.799				
23	.276	1.201	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

On the other hand, Table 34, demonstrates structure matrix.

Table 33: Structure Matrix

	Component							
	1	2	3	4	5	6	7	8
FA1_5		.826						
FA2_5		.899						
FA3_5		.761						
BB5_5_Hind	.578							
BB6_5_Att	.636							
BB21_5_Confi	.792							
BB22_5_Confi	.791							
FK2_O			.646					
FK3_3			.622					
FK5_O			.646					
FK6_4			.691					
BB9_5_Con				.711				
BB10_5_OverOpt				.802				
BB11_5_Avai				.680				
FB6_6					.761			
FB7_7					.760			
FB8_3					.642			
CU9_5						.868		
CU10_5						.877		
BB3_5_Conf							.831	
BB4_5_Conf							.821	
CU1_5								.758
CU2_5								.767

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Table 34, demonstrates the outcomes of the EFA test, where the majority of paragraphs in the construct were accepted. However, a few paragraphs were removed because they did not meet the minimum value of 0.5 or greater. According to Hair et al. (2010), the loadings less than 0.5 can be ignored.

Cronbach Alpha was applied once more to ensure that the 8 factors (23 statements) generated by (EFA) are accurate, and the overall score was 0.815, as shown in table 35.

Table 34: Reliability Statistics

Cronbach's Alpha	N of Items
.815	23

As a result, the measurement model and the structural model are the two stages involved in SEM (Blunch, 2012); the first step is used to evaluate the validity of the hypothesised model, while the second step explores the causal relationships between the model's unobserved variables. On the one side, the measurement model describes the relationships between the observed variables' factor loadings and the latent variables. This analysis, on the other hand, would be checked in two ways: First, launching good fitness levels that are appropriate for the model. Second, validate construct validity by obtaining specific confirmation (Byrne, 2013).

As a result, AMOS24 was used to conduct confirmatory factor analysis (CFA) to evaluate the measurement model's validity, construct validity, accuracy, and convergent and discriminant validity. Table 36 demonstrates the t-value for each item.

Table 35: One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
FK2_O	157.177	400	.000	1.93516	1.9110	1.9594
FK3_3	104.612	400	.000	1.85287	1.8180	1.8877
FK5_O	98.995	400	.000	1.83541	1.7990	1.8719
FK6_4	90.662	400	.000	1.80299	1.7639	1.8421
FB6_6	57.064	400	.000	3.94264	3.8068	4.0785
FB7_7	66.113	400	.000	3.05237	2.9616	3.1431
FB8_3	71.112	400	.000	1.67082	1.6246	1.7170
FA1_5	34.583	400	.000	1.88778	1.7805	1.9951
FA2_5	40.557	400	.000	2.00998	1.9125	2.1074
FA3_5	40.948	400	.000	2.52120	2.4002	2.6422
CU1_5	63.635	400	.000	1.57357	1.5250	1.6222
CU2_5	87.004	400	.000	1.78554	1.7452	1.8259
CU9_5	57.678	400	.000	1.25187	1.2092	1.2945
CU10_5	56.772	400	.000	1.29676	1.2519	1.3417
BB3_5_Conf	123.409	400	.000	4.08728	4.0222	4.1524
BB4_5_Conf	105.138	400	.000	4.01496	3.9399	4.0900
BB5_5_Hind	61.145	400	.000	3.43641	3.3259	3.5469
BB6_5_Att	75.533	400	.000	3.64589	3.5510	3.7408
BB9_5_Con	99.053	400	.000	4.05486	3.9744	4.1353
BB10_5_OverOpt	117.761	400	.000	4.12968	4.0607	4.1986
BB11_5_Avai	92.301	400	.000	3.93267	3.8489	4.0164
BB21_5_Confi	74.124	400	.000	3.89277	3.7895	3.9960
BB22_5_Confi	70.177	400	.000	3.78304	3.6771	3.8890

According to Table 36, the p-values of the components are less than 0.05. The T-value test is a form of statistical test used to validate path coefficients, and it is assumed to be significant at (p-value < 0.05) (Hair *et* al., 2010). T-value is also conducted to see if the differences in means on various factors were statistically significant (Blunch, 2012). However, this does not prove convergent validity, and in order to do so, the Average Variance Extracted (AVE) method was used. Bagozzi and Yi (1988);

Schermelleh-Engel, Moosbrugger, and Müller (2003) propose that the adequate (AVE) value for overall constructs be greater than 0.5. When measuring scales, indeed, Cronbach's coefficient alpha is the most well-known indicator of reliability. While this measure has been questioned for being a lower bound (over or under-estimated) and thereby undervaluing accurate reliability, it has also been praised. Composite reliability (CR), which is usually computed in parallel with structural equation modelling, is a common alternative to coefficient alpha (Mulaik et al., 1989; Bacon, Sauer and Young, 1995). Composite reliability (CR) was calculated as well in order to support the previous statistical results. Table 37 represents the validity and reliability of the measurement model.

Table 36: Validity and Reliability of the Measurement Model

The Variables	Factors	AVE	CR
Financial Literacy	F_K	0.75	0.91
	F_A	0.72	0.90
	F_B	0.64	0.86
	CUL_I	0.68	0.88
	CUL_III	0.69	0.89
Behavioural Biases	BB_I	0.67	0.71
	BB_II	0.62	0.83
	BB_III	0.61	0.85

When validating the measurement model, two considerations should be made: First, the model's goodness of fit indices; second, evidence of construct validity as well as the measurement model's reliability (Bollen, 2014; Schumacker and Lomax, 2012; Hair et al., 2010). Construct validity includes convergent and discriminant validity,

which were used to test the measurement model validity using CFA and AMOS26. However, factor loadings were used to measure convergent validity, and they were considered meaningful when they were 0.5 or greater, as previously shown (Hair et al., 2010).

In general, both composite reliability (CR) and Cronbach's alphas for entire factors are greater than (0.70). Furthermore, the values of AVE for all factors are above 0.5. This is recommended by Hair et al., 2010.

At this point, the goodness of fit indices should be measure. SEM can be used to calculate fit indices in three different ways (Hu and Bentler (1999):

1) Absolute fit indices, such as the likelihood ratio statistic chi-square, are used to assess the overall model fit. Whereas chi-square, df, p>0.05 indicates a good model fit. The root means a square error of approximation (RMSEA), these two measures: the absolute fit, whereas RMSEA < 0.06 indicates a good fit, while when root mean square error < 0.08 indicates acceptable fit.
2) Incremental fit indices, which are used to compare the proposed model to a reference model. If the comparative fit index (CFI) > 0.95 indicates excellent model while CFI >0.90 indicates acceptable.
3) If P of close fit (PClose) is higher than 0.05 represents an excellent model while PClose is between 0.01 and 0.05 indicates an acceptable model.

Table 37: Cutoff Criteria

Measure	Terrible	Acceptable	Excellent
CMIN/df	>5	>3	>1
CFI	<0.90	<0.95	>0.95
RMSEA	>0.08	>0.06	<0.06
PClose	<0.01	<0.05	>0.05

Source: Hu and Bentler (1999)

Table 39, indicates the goodness of fit statistics of CFA model for the construct.

Table 38: Goodness of Fit Statistics of CFA Model for the Construct

Measure	Estimate	Threshold	Interpretation
Chi-square	399.335	--	--
Chi-square / df	221.000	--	--
Chi-square / df	1.807	Between 1 and 3	Excellent
CFI	0.908	>0.95	Acceptable
RMSEA	0.045	<0.06	Excellent
PClose	0.881	>0.05	Excellent

According to Table 39, Chi-square/df, RMSEA and PClose are excellent while CFI is acceptable. Therefore, the model fit is excellent. A measurement model should be developed based on these results, which is shown in Figure 14.

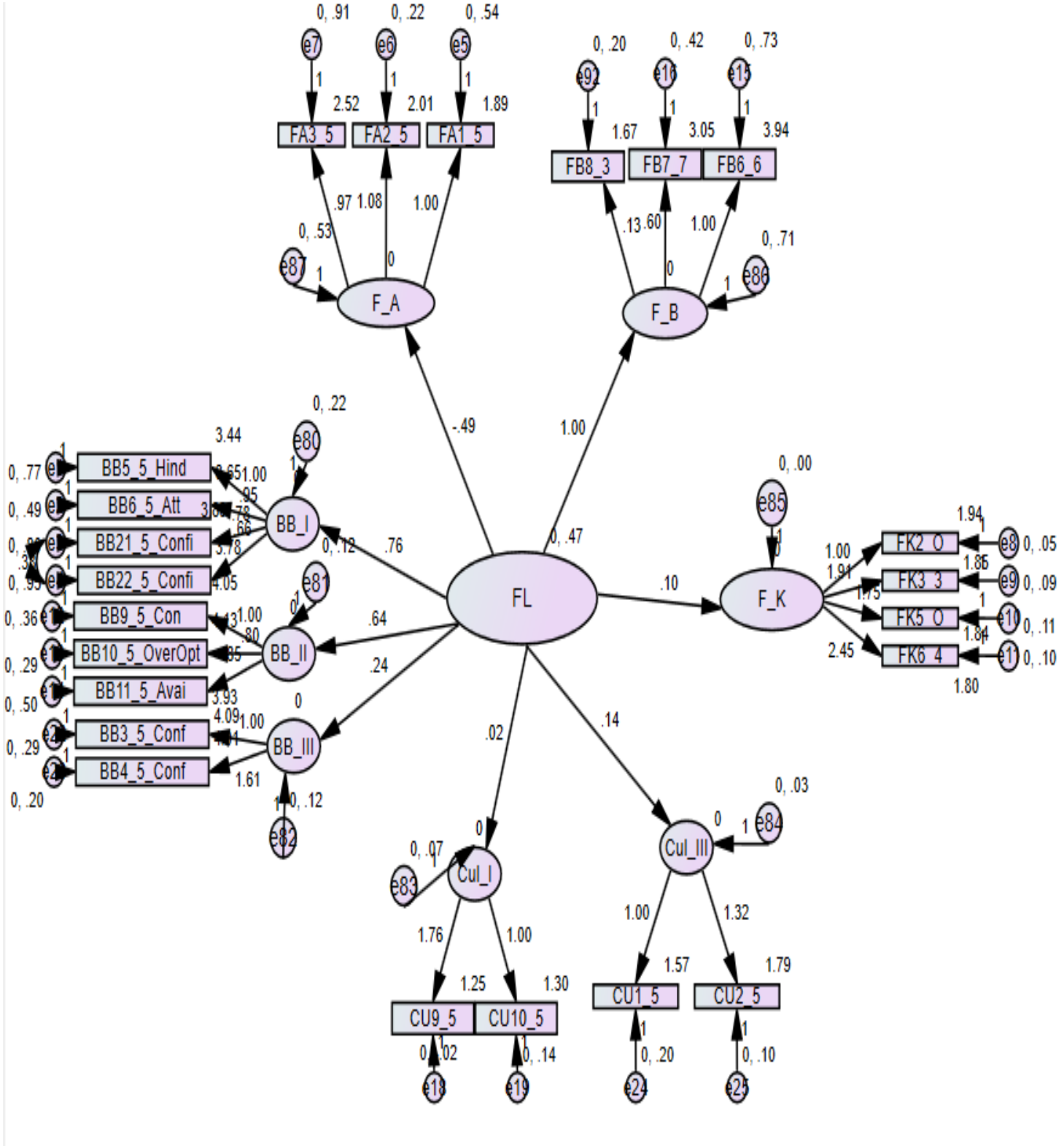


Figure 14: Measurement Model

Table 39: Goodness of Fit Indices of Financial Literacy

Measure	Estimate	Threshold	Interpretation
Chi-square	119.644	--	--
Chi-square / df	67.000	--	--
Chi-square / df	1.786	Between 1 and 3	Excellent
CFI	0.951	>0.95	Excellent
RMSEA	0.044	<0.06	Excellent
PClose	0.756	>0.05	Excellent

According to Table 40, Chi-square/df, CFI, RMSEA and PClose are excellent. Therefore, the model fit is excellent for financial literacy. The financial literacy model is shown in Figure 15.

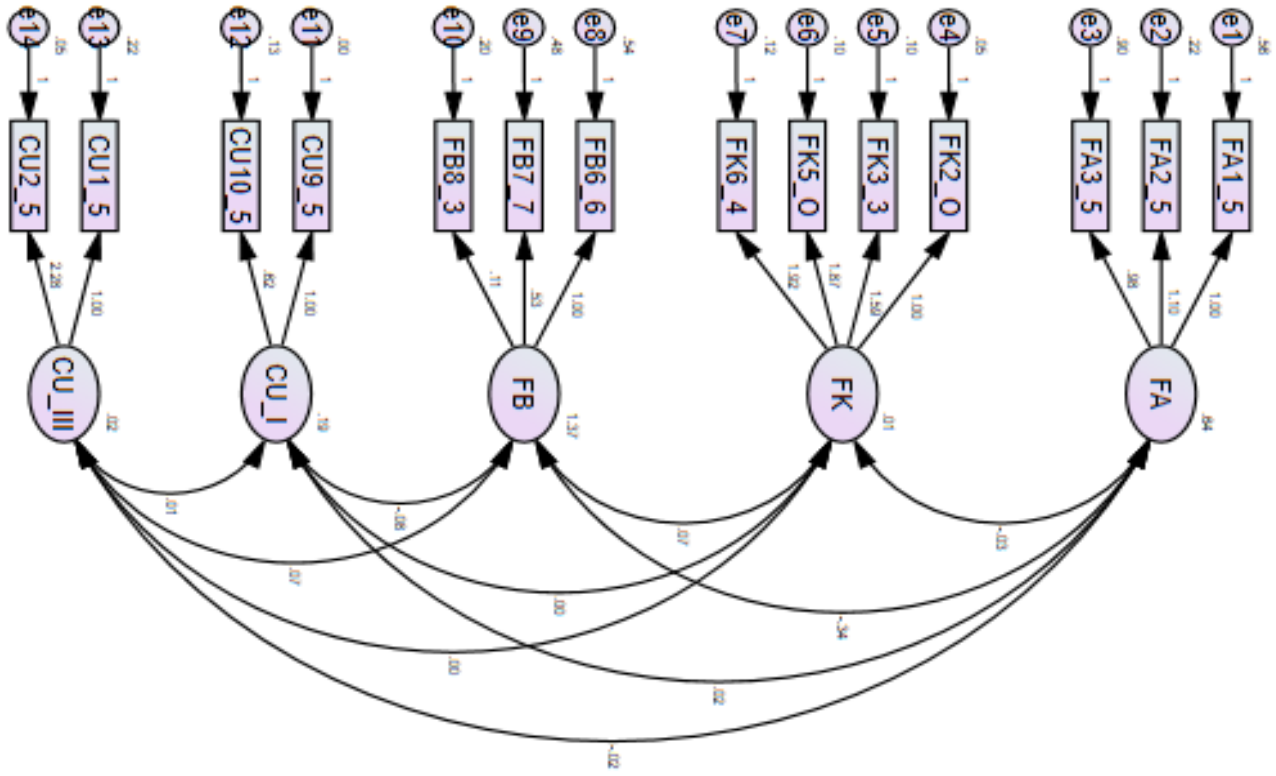


Figure 15: Financial Literacy Model

Table 40: Goodness of Fit Indices of Behavioural Biases

Measure	Estimate	Threshold	Interpretation
Chi-square	48.662	--	--
Chi-square / df	22.000	--	--
Chi-square / df	2.212	Between 1 and 3	Excellent
CFI	0.963	>0.95	Excellent
RMSEA	0.055	<0.06	Excellent
PClose	0.319	>0.05	Excellent

According to Table 41, Chi-square/df, CFI, RMSEA and PClose are excellent. Therefore, the model fit is excellent for behavioural biases. The behavioural biases model is shown in Figure 16.

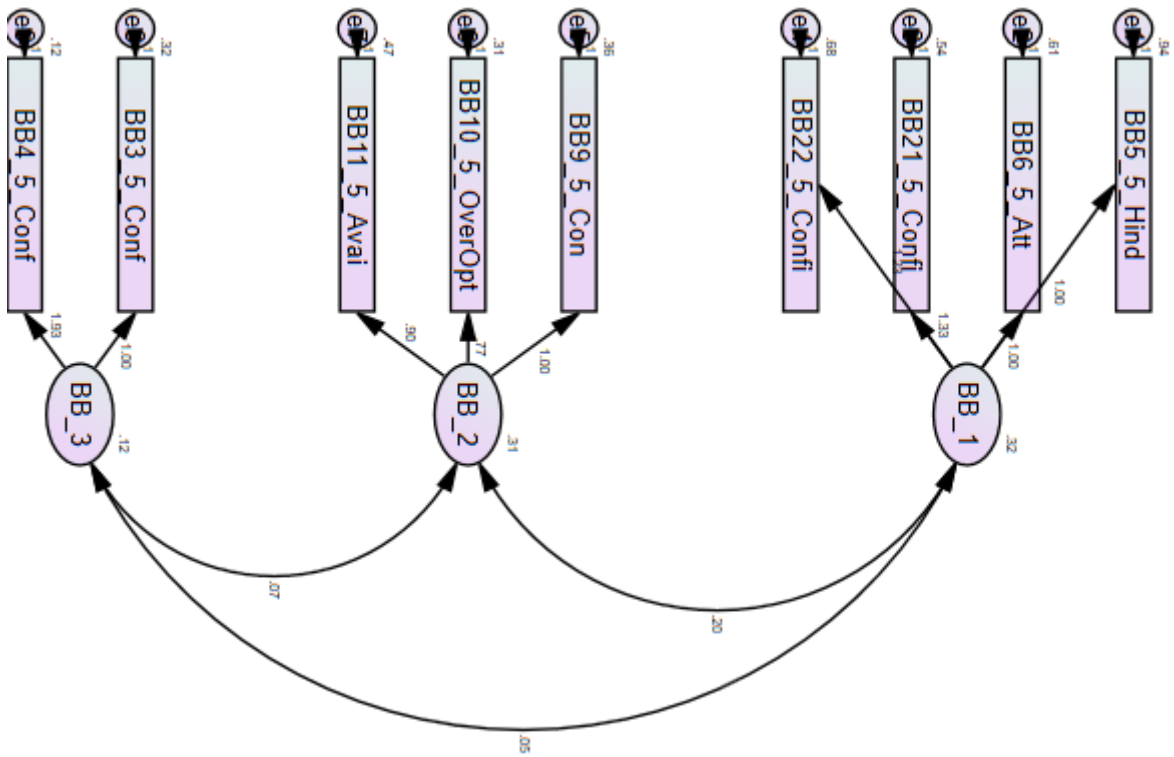


Figure 16: Behavioural Biases Model

5.4. Analysis of Financial Literacy and the Financial Literacy Score

Financial knowledge, financial attitude, financial behaviour and culture were analysed, and the financial literacy scores were calculated, in this section.

5.4.1. Financial Literacy Analysis

Eight financial knowledge questions were asked of participants in Bristol and Istanbul to measure the financial knowledge score. Financial knowledge questions consist of division, time value of money, interest paid on a loan, calculation of interest plus principal, compound interest, risk and return, the definition of inflation, and diversification. Table 41 shows the answers given to the financial knowledge questions by the participants in Bristol and Istanbul.

Table 41: Responses Given for the Financial Knowledge Questions

Financial Knowledge	**Total = 403**			
	1		**0**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Division	376	93.3%	27	6.7%
Time value of money	342	84.9%	61	15.1%
Interest paid on a loan	385	95.5%	18	4.5%
Calculation of interest plus principle	336	83.4%	67	16.6%
Compound interest	323	80.1%	80	19.9%
Risk and return	385	95.5%	18	4.5%
Definition of inflation	392	97.3%	11	2.7%
Diversification	291	72.2%	112	27.8%

According to Table 41, the definition of inflation is a well-known subject among participants in Bristol and Istanbul (97.3%). Risk and return (95.5%), interest paid on a loan (95.5%) and division (93.3%) were generally answered correctly. These four subjects were correctly answered by over 90% of the participants in Bristol and Istanbul. However, participants in Bristol and Istanbul have a lack of knowledge about diversification (27.8%), compound interest (19.9%), calculation of interest plus principal (16.6%) and the time value of money (15.1%).

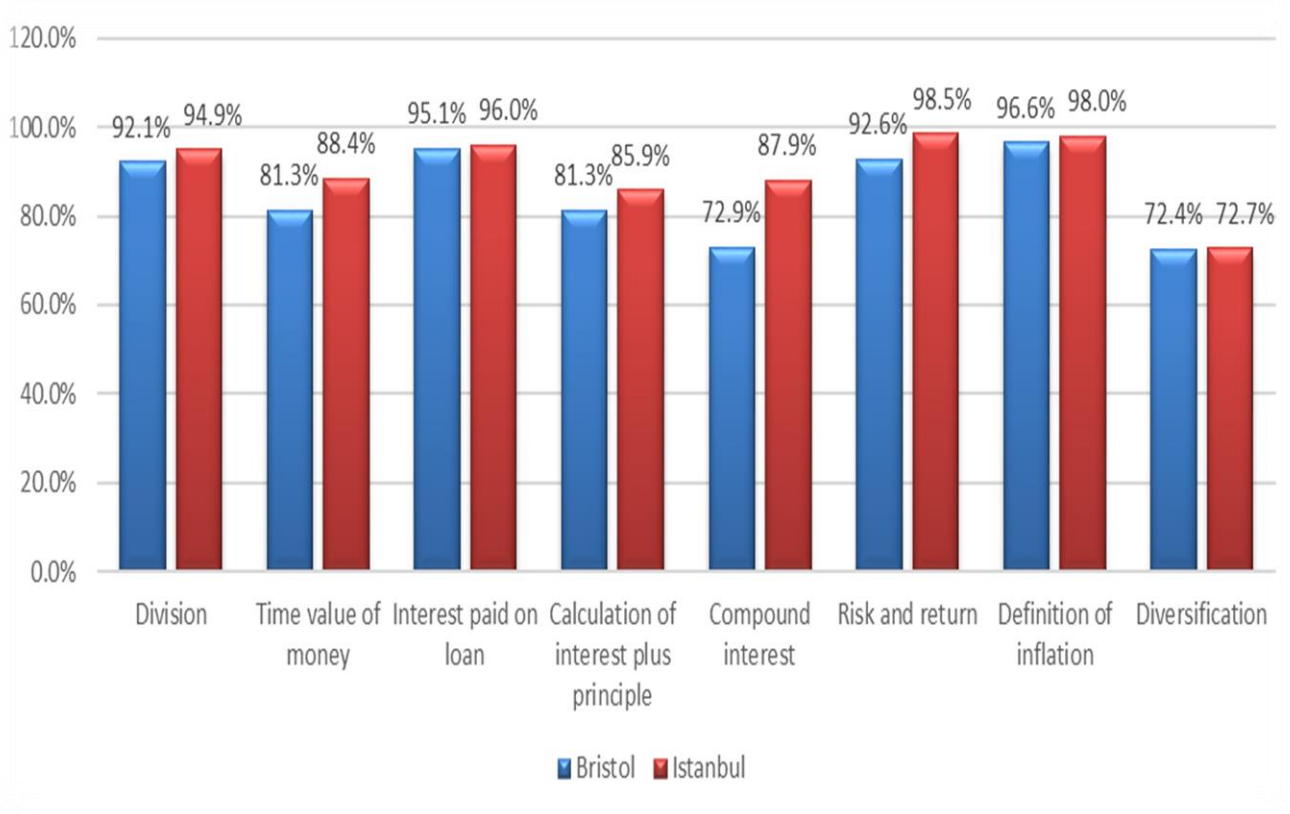
In general, young adults in Bristol and Istanbul have knowledge about basic financial terms, but their complex financial knowledge should be improved. These results are similar with studies of Knoll and Houts (2012), Lusardi (2013), OECD (2015), Ergun (2018). Also, their perceived financial knowledge was average because they have knowledge about basic financial issues, but they do not have sufficient knowledge about complex financial issues. The knowledge about risk and return is one of the well known subject among young adults, but they do not know how they can manage the risks associated with their investments. As a result of this, diversification is less known subject among young adults in Bristol and Istanbul. It means that they are more likely to behave riskily due to lack of knowledge about diversification. Also, young adults who have less knowledge about diversification generally rely on their family's and friends' advice (Lusardi and Mitchell, 2014). At the same time, they are more likely to miss higher returns in the future due to less knowledge about compound interest (OECD, 2015). According to Alkaya and Yagli (2015), even if young adults have knowledge about the interest rate, they do not have enough knowledge about compound interest. They probably want to make a retirement plan but most probably returns is underestimated due to lack of compound interest knowledge. On the other hand, inflation is the best known financial subject among young adults. They may

intend to make an investment to protect their money against inflation. However, lower returns could be accepted because they do not have advanced calculations skills.

In order to increase the financial knowledge of young adults, risk diversification, compound interest and the time value of money should be taught to them through financial education. Also, their advanced calculation skills should be improved to a better understanding of these subjects.

Table 42 compares the results of the responses to the financial knowledge questions by the participants in Bristol and Istanbul. Blue bars show the Bristol responses, while red bars indicate the Istanbul responses.

Table 42: The Comparison of Financial Knowledge



As Table 42 shows, participants in Istanbul have greater financial knowledge than participants in Bristol. Risk and return (98.5%), the definition of inflation (98.0%), and interest paid on loan (96.0%) are well-known subjects among participants in Istanbul, and definition of inflation (96.6%), interest paid on loan (95.1%) and risk and return (92.6%) are also well-known subjects among participants in Bristol. In contrast, diversification (72.7%), calculation of interest plus principle (85.9%) and compound interest (87.9%) are lesser-known subjects in Istanbul. Diversification (72.4%), compound interest (72.9%) calculation of interest plus principle (81.3%) and the time value of money (81.3%) are lesser-known subjects in Bristol. The financial knowledge of participants in Istanbul is greater than for participants in Bristol.

Young adults in Bristol and Istanbul have similar financial knowledge. According to OECD (2015), the financial literacy level of UK and Turkey was quite similar. The risk diversification is less known subject among young adults in Bristol and Istanbul. Basically, young adults do not know how they can manage the risks (Sevim *et., al*., 2012; Lusardi and Mitchell, 2014; OECD, 2015). Compound interest calculation is better known among young adults in Istanbul, although it is one of the less known subjects in both cities. The potential saving growth in Istanbul is likely to be higher than Bristol due to higher knowledge about compound interest. Young adults in Istanbul have more knowledge about inflation. As a result of this, the subject of the time value of money is better known in Istanbul than Bristol. This result supports that young people in Istanbul may tend to spend less during periods of increased inflation (Ergun, 2017). At the same time, investment decisions may be taken less in Bristol than Istanbul because knowledge about inflation and time value of money are lesser-known in Bristol. Young adults should have enough knowledge about compound

interest, inflation and time value of money to make effective investment decisions (Sarigul, 2014).

Table 43 shows the correct answers given to the financial behaviour questions by participants in Bristol and Istanbul. Financial behaviour questions consist of considered purchase, timely bill payment, keeping watch on financial affairs, long-term financial goal setting, take a decision about money, active saving, choosing products, and borrowing to make ends meet.

Table 43: Given Responses to the Financial Behaviour Questions

Financial Behaviour	**Total = 403**			
	1		**0**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Considered purchase	370	91.8%	33	8.2%
Timely bill payment	363	90.1%	40	9.9%
Keeping watch on financial affairs	309	76.7%	94	23.3%
Long-term financial goal setting	268	66.5%	135	33.5%
Take a decision about money	362	89.8%	41	10.2%
Active saving	402	99.8%	1	0.2%
Choosing products	398	98.8%	5	1.2%
Borrowing to make ends meet	271	67.2%	132	32.8%

According to Table 43, 99.8% of the participants in Bristol and Istanbul are actively saving. 98.8% of the participants also exhibit good financial behaviour before choosing a product, and 91.8% of the participants consider their financial situation carefully, assessing whether they can afford it or not before buying. Additionally, bills are paid on time by 90.1% of the participants. Day to day decisions about money is made by

89.8% of the participants. 33.5% of the participants do not set long-term financial goals. If they faced a major expense, they are not able to pay it without borrowing the money or asking family or friends to help.

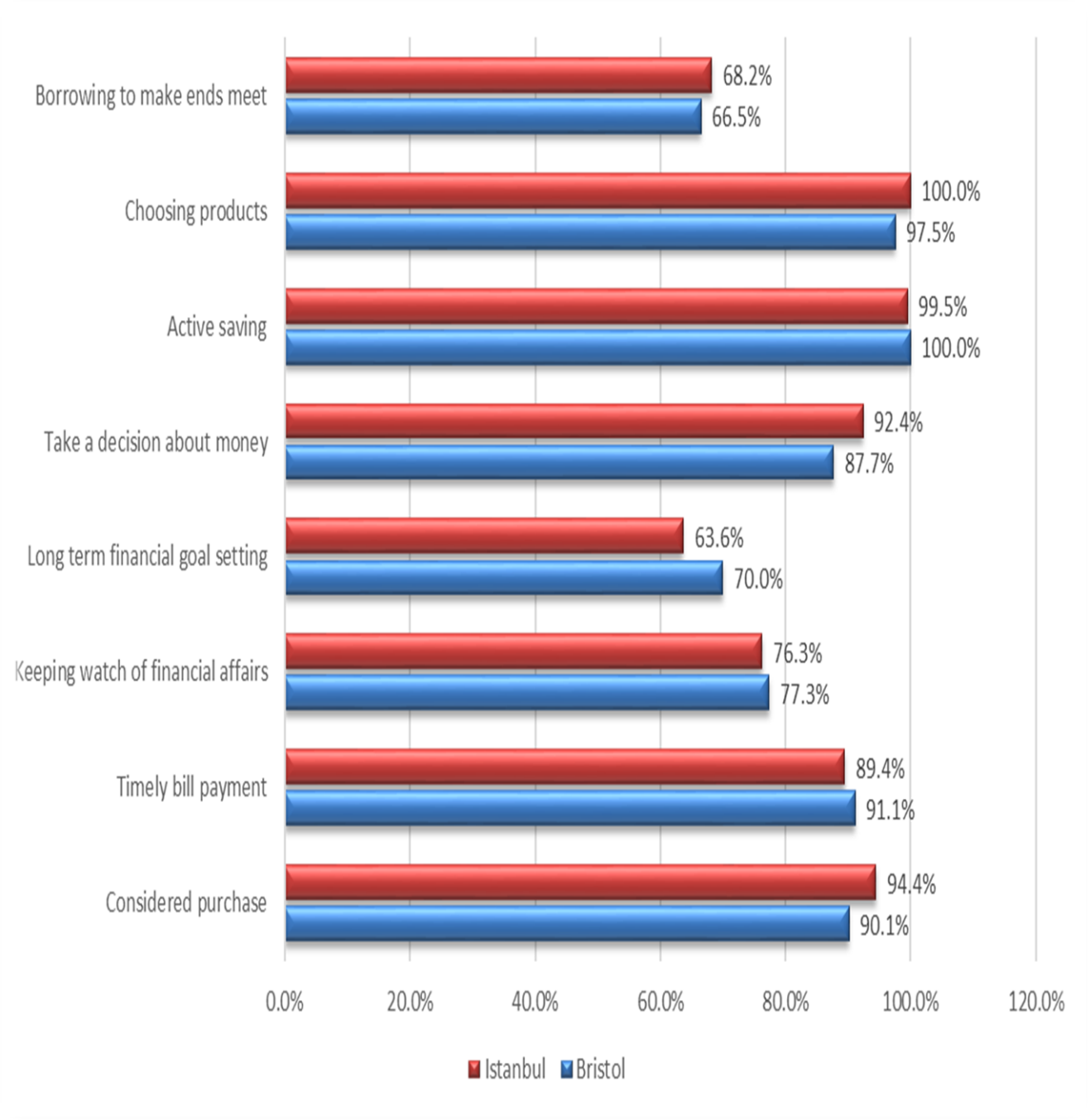
In general, young adults in Bristol and Istanbul actively saved their money in the last twelve months. This result shows they were aware of the importance of saving, but as financial knowledge results indicate that they could not calculate the higher return. It is not only an increase in the well-being of the individual by making savings, but it is also important for both the individual and the society to transfer these savings to which investment instrument. For this reason, the ability of the individual to manage his/her savings and evaluate investment options based on being financial literate (Temizel and Bayram, 2011). At the same time, young adults in Bristol and Istanbul are able to use their savings if they have to spend more than their income. However, in this situation, they can be faced with the reduction of existing resources. Therefore, if they evaluate their savings for appropriate financial instruments, their existing resources may be less affected by unexpected situations (Ergun, 2017).

On the other hand, most of the young adults are not able to pay their unexpected expenses without asking family or friends to help. This shows due to the lack of existing financial knowledge, they are unable to choose an effective investment instrument and are willing to accept lower returns (Sarigul, 2014). Another reason could be a lack of long term financial plan. Most of the young adults in Bristol and Istanbul do not have long term financial plan. This shows that they do not know exactly how and where to obtain financial products and services and that financial instruments cannot be used effectively (Hayta, 2011). Thus, young adults are inadequate in creating and managing wealth.

Most of the young adults in Bristol and Istanbul carefully consider their situation whether they can buy it or not before buying any product. Also, they are faithful to their debt. However, they do not know what to pay attention to when making their budgets and how to plan budgets. Therefore, the balance between spending and saving cannot be achieved. Lack of budget preparation habits causes young adults to borrow more (Lusardi, 2013). As a result of this, the borrowing level of young adults is being expected to increase in the future unless financial education is provided to underline the importance of preparing to budget.

Table 44 compares the financial behaviour results of participants in Bristol and Istanbul. Blue bars show the responses given in Bristol, and red bars indicate the responses given in Istanbul.

Table 44: The Comparison of Financial Behaviour



According to Table 44, 100% of the participants in Bristol are actively saving, and 97.5% of the participants in Bristol exhibit good financial behaviour before choosing a product. Bills are paid on time by 91.1% of the participants in Bristol. 100% of participants in Istanbul show good financial behaviour before choosing a product, and 99.5% of the participants in Istanbul are actively saving. 94.4% of the participants in

Istanbul consider their financial situation carefully, assessing whether they can afford it or not before buying. If they faced a major expense, 33.5% of the participants in Bristol and 31.8% of the participants in Istanbul would not be able to pay it without borrowing the money or asking family or friends to help. Also, 30.0% of the participants in Bristol do not set up long-term financial goals, while this percentage is 36.4% for the participants in Istanbul.

Even if young adults do not have long term financial plans, it is obvious that more young adults in Bristol have long term financial plans compared to Istanbul. It means that young adults in Bristol invest more for their retirement. Thus, their welfare is more likely not to decrease. At the same time, this indicates that products that are unnecessary in the long run can be purchased less frequently by young adults in Bristol (Eker, 2017). This could increase the savings level in Bristol.

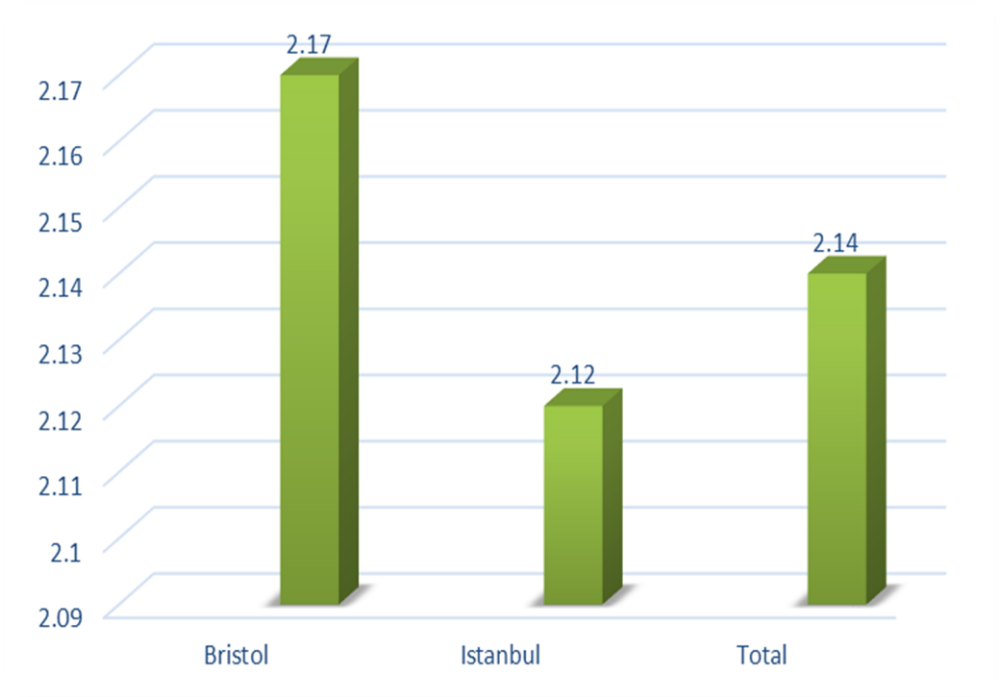
Additionally, young adults in Bristol, which make long-term financial targets, are expected to be more successful in both financial instrument selection and long-term best use (Mandell, 2016). Also, more young adults in Bristol tend to prepare a budget. This shows that young adults in Bristol can make smarter investment decisions and keep their debts sustainable (Jariwala, 2013). Because they keep a written budget and regularly spend by comparing their current and planned expenditures, therefore, this will enable them to make more accurate decisions (Hogart *et al*., 2003).

On the other hand, more young adults consider their financial situation, whether they can buy any products or not before buying it. As a result of this, more young adults in Istanbul can pay off their unexpected expenses without asking family or friends to help. Basically, culture affects the financial behaviour of young adults (Chen and Lemieux,

2016). Young adults in Bristol are more focused on saving, investment and long term plan while young adults in Istanbul are more focused on spending.

Table 45 shows the financial attitude scores of participants in Bristol and Istanbul. Financial attitude scores range from 1 to 5. A larger number indicates that an individual has a long-term financial plan, and a smaller number demonstrates short-term financial planning.

Table 45: The Comparison of Financial Attitude



As Table 45 indicates, the financial attitude score of all participants is 2.14. This shows that the participants are focusing on a short-term financial plan instead of a long-term financial plan. This score is 2.12 for Istanbul participants and 2.17 for participants in Bristol. Therefore, participants in Bristol and Istanbul are both likely to be focusing on a short-term financial plan, but participants in Bristol are more focused on a long-term financial plan than participants in Istanbul.

As a summary, more young adults in Bristol focused on long-term plans than Istanbul. This shows that the saving level in Bristol would be higher than in Istanbul. For this, young adults in Bristol must choose effective and accurate financial instruments. However, in the financial knowledge section, it has been revealed that most of the young adults are inadequate in advanced financial subjects. In order to use the savings in Bristol more effectively, an appropriate financial education should be provided, including complex financial issues. Basically, young adults financial plan are affected by the economic conditions of society. The uncertainties and risks in the economy negatively affect the long-term plans of young people, and therefore their investment, saving and spending decisions (Eker, 2017). Although young adults in Bristol make more long-term plans, the shorter plans of Istanbul's ones may be due to the different economic conditions they are involved in.

Table 46 shows the results of culture questions from the participants in Bristol and Istanbul. Culture questions consist of risk, time, norms, freedom and social prestige.

Table 46: Given Responses to the Culture Questions

Culture	**Total = 403**			
	1		**0**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Risk	230	57.1%	173	42.9%
Time 1	315	78.2%	88	21.8%
Time 2	70	17.4%	333	82.6%
Time 3	356	88.3%	47	11.7%
Norms 1	246	61.0%	157	39.0%
Norms 2	216	53.6%	187	46.4%
Freedom 1	326	80.9%	77	19.1%

Freedom 2	353	87.6%	50	12.4%
Social Prestige 1	101	25.1%	302	74.9%
Social Prestige 2	119	29.5%	284	70.5%

According to Table 46, 88.3% of the participants in Bristol and Istanbul are not prepared to spend money now and let the future take care of itself. 87.6% of participants in Bristol and Istanbul think that money gives them the freedom to do whatever they want to do, and money is a tool to accomplish goals, according to 80.9% of the participants. It can be seen that the most important subject for participants in Bristol and Istanbul is freedom. However, 82.6% of the participants tend to postpone tasks, even though it would benefit them to carry out the tasks immediately. 74.9% of the participants indicate that money is not a tool to make friends with, and 70.5% of the participants do not do everything for money. Additionally, 53.6% of participants think that people should not have debts.

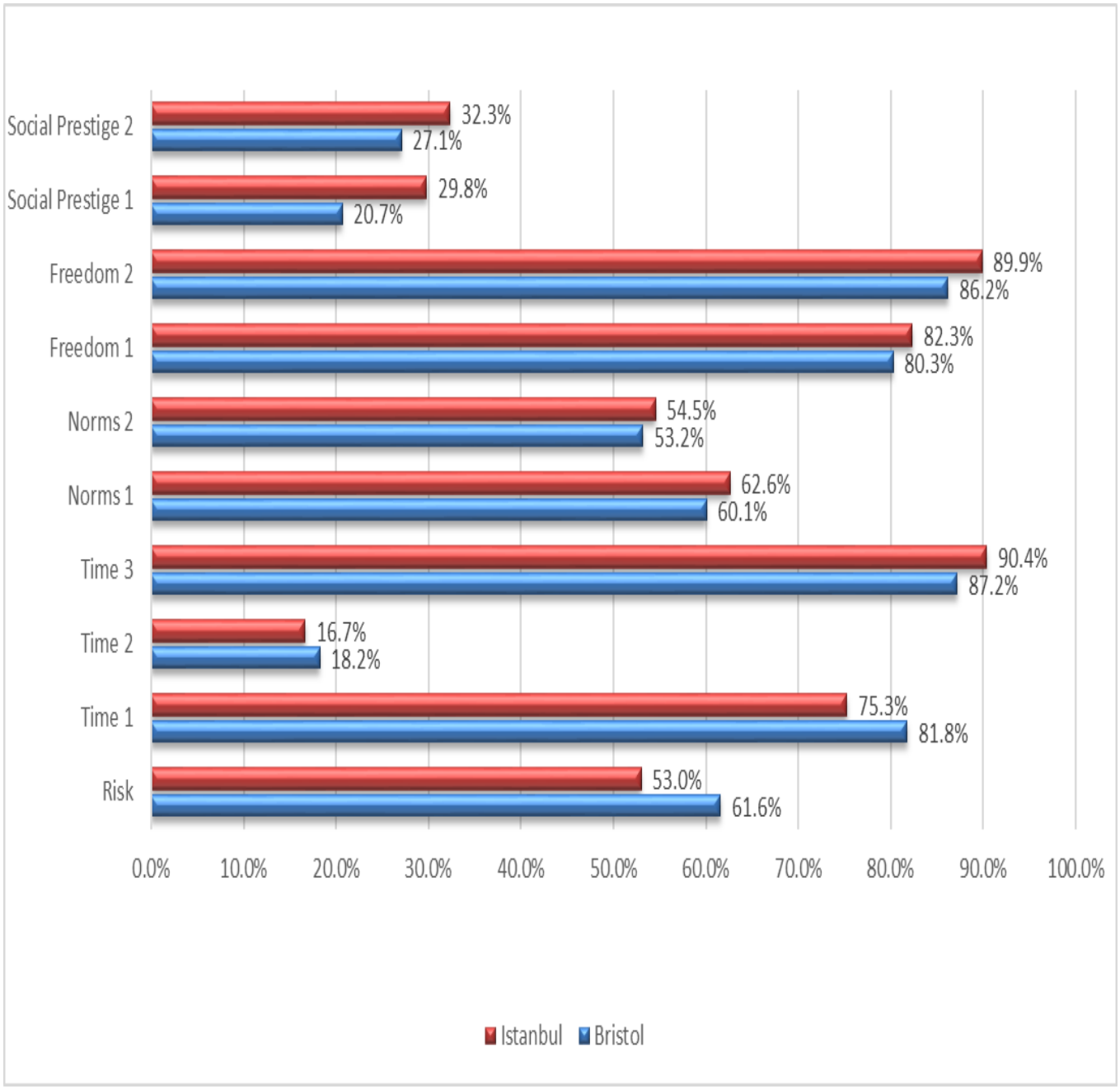
As a summary, risk perception, spending habit, norms, freedom and social prestige questions were asked to young adults in order to understand cultural effects. Young adults in Bristol and Istanbul exhibit slightly over average risky behaviour, but they have insufficient knowledge about risk diversification. According to Lusardi (2013) generally, young adults make more risky financial decisions, although they do not know risk diversification. Young adults in Bristol and Istanbul tend to postpone their spending in case of financial distress or to be able to buy more in tomorrow. They need to know how they can increase their welfare in order to be able to buy more tomorrow. For this, effective financial instruments and saving strategies should be known (Temizel and Bayram, 2011). As it is indicated in financial knowledge section, they do not know how can they increase their wealth because they do not have enough knowledge about complex financial knowledge. In connection with this, many of them

want to stay away from borrowing. At the same time, they pay their bills on time. Thus, they think individuals should not have debt because money provides freedom. If they do not have debts and have enough money, they can do whatever they want more easily (Vijayvargy and Bahkshi, 2018). Additionally, most of them think they could not gain social prestige via money.

In general, young adults in Bristol and Istanbul are careful not to borrow and want to save money. Because they think they will have more freedom to do what they want by reducing their borrowing levels and increasing their savings. However, they do not have enough knowledge about the effective strategies they can use to do these. As stated in the financial behaviour and financial knowledge sections, they are insufficient in complex financial issues and preparing a budget. For this reason, these young adults should be given financial education on these issues.

Table 47 compares culture scores. Blue bars show the responses given in Bristol, while red bars indicate the responses given in Istanbul.

Table 47: The Comparison of Culture



According to Table 47, 87.2% of the participants in Bristol and 90.4% of participants in Istanbul are not prepared to spend money now and let the future take care of itself. 86.2% of the participants in Bristol and 89.9% of the participants in Istanbul think that money gives people freedom. The majority of the participants in Bristol (81.8%) save so that they are able to afford more tomorrow. 82.3% of the participants in Istanbul

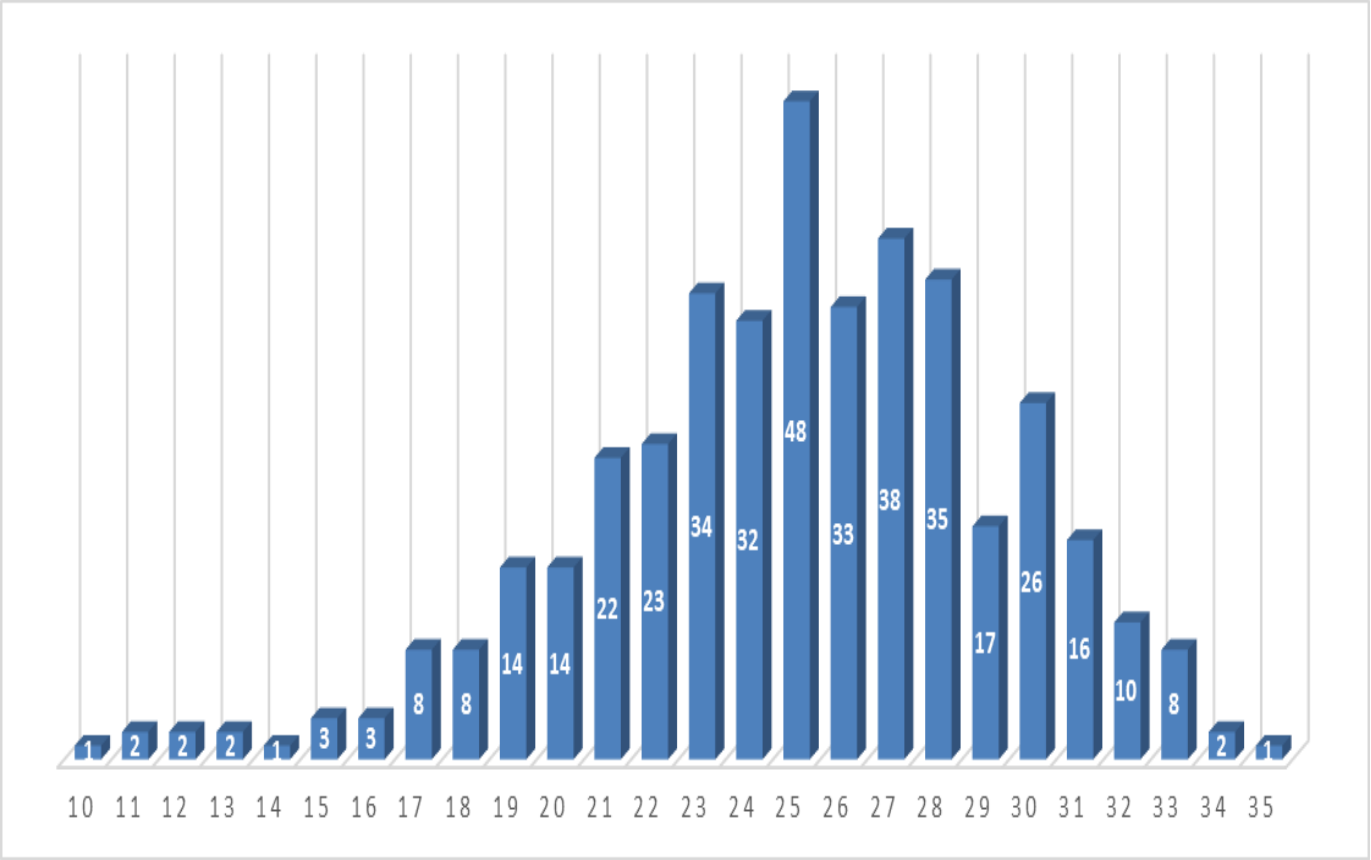
consider that money is a tool to accomplish goals. 18.2% of the participants in Bristol, and 16.7% of the participants in Istanbul do not tend to postpone tasks even though it would benefit them to carry out the tasks immediately. Money is not a tool to make friends for 20.7% of the participants in Bristol and 29.8% of the participants in Istanbul. Additionally, 27.1% of the participants in Bristol and 32.3% of the participants in Istanbul do not do everything for money.

In general, more young adults in Istanbul tend to believe they can gain social prestige via money. At the same time, they think that they can do whatever they want if they have enough money. Therefore, they may want to increase their wealth. Money is seen as a tool for socialization among young adults in Istanbul (Gokmen, 2012). In connection with that, more young adults think that individuals should not have debt or spend more than what they have. More young adults in Bristol can postpone their spending in case of difficulties. However, they exhibit more risky behaviour than Istanbul. It can be said that young adults in Istanbul want to prevent from borrowing, but young adults in Bristol exhibit better behaviour to prevent borrowing as they can easily postpone their spending. Therefore, the borrowing level of Bristol might be lower than in Istanbul in the future.

5.4.2. Financial Literacy Score of All Participants

The financial literacy score was measured by the sum of financial knowledge, financial behaviour, financial attitude, and culture scores. Table 48 indicates the financial literacy score for participants in Bristol and Istanbul. The maximum financial literacy score is 42.

Table 48: Financial Literacy Score



According to Table 48, the most common financial literacy scores are between 23 and 28 points for all participants. The highest financial literacy score, which is given to 48 participants (11.9%) is 25 points. 38 participants' (9.4%) financial literacy score is 27 points. 35 participants' (8.7%) financial literacy score is 28 points. 34 participants' (8.4%) financial literacy score is 23 points. 33 participants' (8.2%) financial literacy score is 26 points, while 32 participants' (7.9%) financial literacy score is 24 points. The highest financial literacy score, which is 35 points, is given to 1 participant. In contrast, 10 points, the lowest financial literacy score, is given to 1 participant.

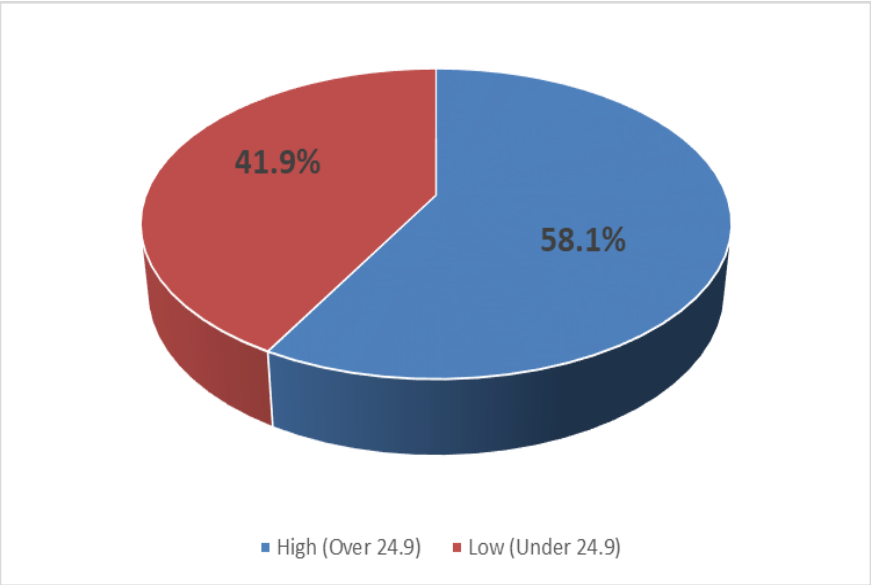
Financial literacy score of young adults in Bristol and Istanbul (24.9) is slightly over average (21.0). This result is quite similar with OECD (2015). According to OECD (2015), the financial literacy level of UK is slightly under the average, but the financial

literacy of Turkey is slightly over the average. The fact that the financial literacy score is slightly higher than the average is due to the knowledge of basic financial issues were known but there was the lack of knowledge on complex financial issues (Lusardi, 2013; Sarigul, 2014; Yardimcioglu and Yoruk, 2016). According to Sevim *et al*. (2012), there is a positive correlation between financial literacy and debt level. It can be said that the debt level of Bristol and Istanbul is expected to stay average level unless young adults financial literacy level is increased. It is known that individuals with less financial knowledge and some missing knowledge about the market tend to borrow more than savings. These people display more negative behaviours than financially successful people in terms of financial decisions, portfolio selection and investment in welfare (Stango and Zinman, 2006). Generally, young adults in Bristol and Istanbul do not prefer borrowing but their financial literacy score is slightly over average. It needs to be increased to gain desirable borrowing level.

At the same time, the average financial literacy level is one of the effective factors for young adults in Bristol and Istanbul to make short-term goals (2.12 out of 5.00). Individuals with high financial literacy make longer-term plans and they want to increase their saving level (Robb ve Woodyard, 2011; Henage ve Mauldin, 2015). Savings have consequences for the whole society to benefit. This ultimately causes an increase in the capacity and growth of the economy. In this framework, individuals should be encouraged to increase savings at the national level. Achieving success with such an incentive can be achieved as a result of increasing the financial literacy of individuals through financial education studies (Mahdzan ve Tabiani, 2013). Also, young adults in Bristol and Istanbul do not know effective saving strategies even if they desire to make a saving. This is one of the reasons why their financial literacy score is slightly over the average.

Table 49 shows the financial literacy level of participants in Bristol and Istanbul. The average financial literacy score, which is calculated by the sum of all points divided by the number of participants, was used to understand participants' financial literacy level. If the participants' financial literacy level is above the average financial literacy score, it means that the participant has a high financial literacy level; if it is below, then they have a low financial literacy level. The average financial literacy score of all participants is 24.9. This is the base point used to determine the financial literacy level of participants in Bristol and Istanbul. Blue shows a high financial literacy level, while red indicates a low financial literacy level.

Table 49: Financial Literacy Level



As Table 49 illustrated, 58.1% of the participants' financial literacy level is high, while 41.9% of the participants' financial literacy level is low. In other words, 234 participants' financial literacy scores are above the average financial literacy score, while 169 participants' financial literacy scores are below the average financial literacy score in Bristol and Istanbul.

As a result of the financial literacy survey, it can be said that the financial literacy level of young adults in Bristol and Istanbul is slightly over the average. Also, their perceived financial knowledge was slightly over the average, as well. This means that they were aware of their shortcomings about financial issues. Therefore it is easy to create an effective financial education program for them. If young adults are willing to cover these shortcomings, they can benefit from financial education at the optimum level (Mandell, 2016).

There are differences between demographic features and financial literacy (Lusardi and Mitchell, 2014; OECD, 2015; Vijayvargy and Bahkshi, 2018). In order to understand the differences between the two, demographic variables were examined in Table 36.

The participants' financial literacy scores and levels are shown in detail in Table 50.

Table 50: Financial Literacy Score by Demographic Variables

Demographic Variables	FL Score	FL Level
Male	24.9	High
Female	25.0	High
Postgraduate education or equivalent (e.g. master's degree, PhD or advanced professional training)	25.8	High
University-level education (e.g. degree or higher level vocational training)	24.9	High
Upper secondary school or high school	23.3	Low
Lower secondary school or middle school (where relevant)	22.0	Low
Single	24.5	Low
Married	25.6	High
Divorced	21.0	Low
In paid employment (work for someone else)	25.1	High
Self-employed (work yourself)	26.6	High
Student	24.3	Low
Unable to work due to sickness or ill-health	22.0	Low
Unemployed	21.8	Low
£0 – £9999	24.3	Low
£10000 – £19999	21.4	Low
£20000 – £29999	25.2	High
£30000 – £39999	29.2	High
£40000 – £59999	26.8	High
£60000+	18.0	Low

Note: Green colour indicates high level while red colours represents low level.

According to Table 50, the financial literacy score of females (25.0) is higher than males (24.9), even if they have a high level of financial literacy. The financial literacy score of participants who have a postgraduate education (25.8) is the highest financial literacy score of all education levels. The lowest financial literacy score, which is 22.0 belongs to participants with a lower secondary school or middle school education level. However, postgraduate and university-level educated participants have a high level of

financial literacy, while upper secondary school or high school and lower secondary school or middle school level participants have a low level of financial literacy. Married participants' financial literacy score (25.6) is higher than the single participants (24.5). At the same time, married participants' financial literacy level is high, and single and divorced participants' financial literacy level is low. The financial literacy level of self-employed and employed participants is high, with financial literacy scores of 26.6 and 25.1, respectively. The financial literacy level of participants who are students, unable to work due to sickness or ill-health, or are unemployed, is low. The highest financial literacy level belongs to £30,000–£39,999 income level participants. However, participants who earn between £20,000 and £59,999 have a high level of financial literacy.

In general, female young adults' financial literacy level is higher than the males. According to GFLEC report (2017), females have a high level of financial literacy than males in the United Kingdom, Mexico, Japan and South Africa while they have less financial literacy in Russia, France, Turkey, United States, Germany, Brazil, Italy, Canada, China, Saudi Arabia, India and Argentina. The high level of financial literacy of female young adult is very important for societies because of their longer life expectation than men, less income from men and career disruptions due to child-rearing affect their future well-being. Young female with high financial literacy is more likely to have a high level of future well-being (Lusardi and Mitchell, 2008). Because financially literate people are more likely to invest in the stock market and pay attention to wages, borrow at low costs, accumulate retirement wealth and diversify risk (Van Rooij et al., 2011).

There is a positive relationship between education and financial literacy (Van Rooij, 2012). Young adults who have a higher education have a higher level of financial literacy. Young adults with a higher education level are expected to be more likely to save more and choose right financial instruments for investment via higher financial literacy than to those who do not have higher education in Bristol and Istanbul. Therefore, financial education, which will increase the level of financial literacy, should start with the young adults who have low level education in societies.

Married young adults have the highest financial literacy level in Bristol and Istanbul (Temizel and Bayram, 2011). It can be said that married young adults are more cautious about financial decisions since their financial level is higher. At the same time, students have lower financial literacy level (Lusardi, 2013) but unemployed young adults have the lowest financial literacy level (Chen and Lemieux, 2016). Young adults who work for themselves have the highest financial literacy in Bristol and Istanbul. Also, there is a positive relationship between income level and financial literacy (Hayta, 2011). In this study, there was not enough participant who earns over £40,000 that is why financial literacy level of young adults is decreasing over £40,000 income.

In summary, married females young adults who have a postgraduate degree and high income, and work for themselves have the highest financial literacy in Bristol and Istanbul. Divorced male young adults who have lower secondary school education and unemployed have the lowest financial literacy level in Bristol and Istanbul.

Table 51 compares participants' financial knowledge self-assessment and their actual financial literacy scores and levels.

Table 51: The Comparison of Financial Literacy Self-Assessment and Actual Score

Self-Assessment	FL Score	Level
Very High	27.1	High
Quite High	26.5	High
About Average	24.9	High
Quite Low	20.7	Low
Very Low	18.5	Low
Do Not Know	15.5	Low

Note: Green colour indicates high level while red colours represents low level.

According to Table 51, the financial literacy score of participants who think that they have very high financial knowledge is the highest financial literacy score (27.1). The participants who do not know their financial knowledge level also have the lowest financial literacy score (15.5). The individuals who think that they have an average or higher level of financial knowledge also have a high level of financial literacy, while the individuals who considered their financial knowledge to be below the average have a low level of financial literacy.

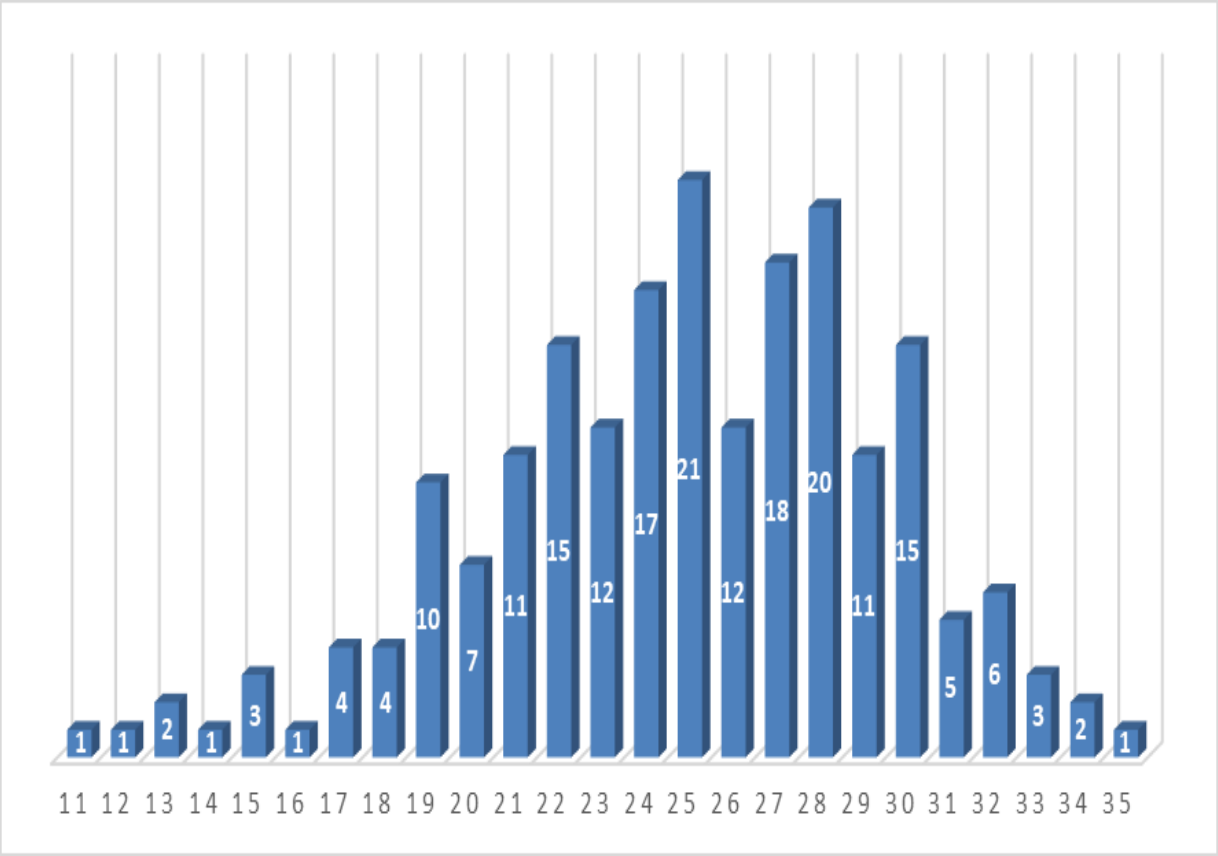
As a summary, young adults who think that they have quite (26.5 out of 42) or very high (27.1 out of 42) financial knowledge have slightly over average financial literacy level. In order to design effective financial education, firstly these group of young adults should be aware of their actual financial knowledge. Otherwise, they can ignore the financial education due to high level perceived financial knowledge. Young adults who think have an average or low financial knowledge, are aware of their actual financial literacy level. It is easy to educate them in the first step. If they are willing to increase their financial knowledge, financial education should be easily given to them.

Therefore, the financial literacy level of young adults in Bristol and Istanbul can be increased rapidly by starting to educate conscious young adults.

5.4.3. Financial Literacy Score of Bristol, UK

In this section, the financial literacy score was measured for participants in Bristol. Table 52 shows the financial literacy score of participants in Bristol. The maximum financial literacy score is 42.

Table 52: Financial Literacy Score of Bristol, UK



According to Table 52, the most frequent financial literacy score in Bristol is 24 points, given to 21 participants. 28 points were given to 20 participants. 18 participants have financial literacy scores of 27 points. The highest financial literacy score, which is 35

points, was given to 1 participant, while the lowest financial literacy score of 11 points, was given to 1 participant.

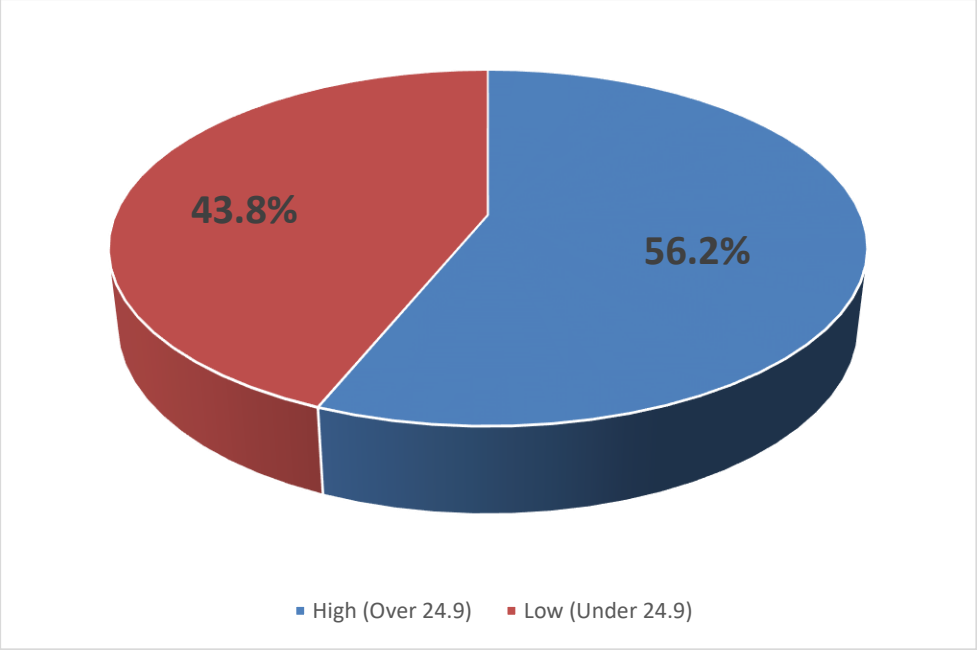
The financial literacy level of young adults in Bristol is slightly over the average as it is 24.8 out of 42. The multitude and complexity of the financial tools and products available in the financial markets affect individuals to make the right financial decisions. Young adults in Bristol do not have enough knowledge about complex financial issues. In addition, financial markets are becoming more complicated with technological developments every single day (Temizel and Bayram, 2011). Young adults in Bristol should be educated about complex financial issues to increase their financial literacy level. Otherwise, they may face a loss of welfare in the future.

If individuals direct some of their earnings to savings instead of spending all, a significant contribution can be made in ensuring social welfare along with individual welfare. High financial literacy is very effective for individuals to make the right savings decisions (Van Rooij, 2012). The savings levels of young adults in Bristol are expected to be slightly above the average because there is a positive relationship between financial literacy and the level of savings. Also, one of the lesser-known financial subject among young adults in Bristol is compound interest. This shows their saving behaviour can be improved by providing advanced financial knowledge.

At the same time, young adults in Bristol tend to exhibit more risky financial behaviour, but risk diversification is a lesser-known subject among them. This is one of the reasons to decrease its financial literacy level. In addition to this, they do not have sufficient knowledge about how can they prepare a budget. Their financial literacy level can be increased by providing financial education about these issues.

Table 53 indicates the financial literacy level of participants in Bristol. If the participants' financial literacy score is above 24.9 points, it means that they have a high level of financial literacy; otherwise, they have a low level of financial literacy. Blue shows a high financial literacy level, while red indicates a low financial literacy level.

Table 53: Financial Literacy Level of Bristol, UK



As Table 53 illustrates, 56.2% of the participants in Bristol have a high level of financial literacy, while 43.8% have a low level of financial literacy. In other words, 114 participants' financial literacy score is above the average financial literacy score, while 89 participants' financial literacy score is below the average financial literacy score. It can be said that most participants in Bristol have a high level of financial literacy.

Table 54 compares the financial literacy score and financial literacy level by demographic variables.

Table 54: Financial Literacy Score by Demographic Variables in Bristol, UK

Demographic Variables - Bristol	FL Score	Level
Male	24.6	Low
Female	25.0	High
Postgraduate education or equivalent (e.g. master's degree, PhD or advanced professional training)	25.9	High
University-level education (e.g. degree or higher level vocational training)	24.7	Low
Upper secondary school or high school	23.6	Low
Lower secondary school or middle school (where relevant)	27.0	High
Single	24.0	Low
Married	26.1	High
In paid employment (work for someone else)	24.9	High
Self-employed (work yourself)	26.7	High
Student	24.3	Low
Unemployed	21.8	Low
£0 – £9999	24.3	Low
£10000 – £19999	20.7	Low
£20000 – £29999	24.9	High
£30000 – £39999	29.7	High
£40000 – £59999	30.3	High
£60000+	11.0	Low

Note: Green colour indicates high level while red colours represents low level.

According to Table 54, the financial literacy score for female participants in Bristol (25.0) is higher than for male participants in Bristol (24.6). The financial literacy level of the female participants is high, while the financial literacy level of the male participants is low. The financial literacy level of young individuals who are educated to postgraduate level is high, and their financial literacy score is 25.9. Interestingly, the participants with a lower secondary school or middle school education level also have a high financial literacy level, and their financial literacy score is 27.0. The financial literacy level of participants with university and upper secondary school or high school

education level is low. Also, married participants' financial literacy level is higher than for single participants. The financial literacy level of participants who are self-employed or employed is high, while students and unemployed participants' financial literacy level is low. The participants who have an income level between £20,000 and £59,999 have a high level of financial literacy.

Female young adults financial literacy level is higher than male young adults financial literacy in Bristol. Female young adults in Bristol are more likely to invest in the stock market and pay attention to fees, diversify risk, borrow at low costs and accumulate wealth for retirement (Lusardi and Mitchell, 2008). Young adults who have a higher education have a high level of financial literacy in Bristol. Only 1 young adult in Bristol had lower secondary school education that is why the highest financial literacy belongs to lower secondary school education of young adults. There were not enough participants who have lower secondary school education to assess their financial literacy level. In order to increase financial literacy in Bristol, the education level of individuals should be increased because there is a positive relationship between education level and financial literacy (Mandell and Klein, 2009). Studies without increasing the level of education of individuals would be costly. At the same time, financial issues can be included in educational programs in schools. Also, married young adults have higher financial literacy level in Bristol. Students have a low level of financial literacy, while unemployed young adults have the lowest financial literacy in Bristol. Generally, students have a low level of financial literacy (Cameron, 2014). This is proof that students are not getting enough financial education. There is a positive relationship between income level and financial literacy among young adults in Bristol. Only 1 young adult who earned over £60,000 participated in the survey that is why the lowest financial literacy belongs to this group.

In summary, married female young adults who have higher education, higher income and work for themselves have the highest financial literacy level. Single male unemployed young adults who have lower education level and low income have the lowest financial literacy.

Table 55 compares self-assessment financial knowledge and the actual score of participants in Bristol.

Table 55: The Comparison of Financial Knowledge Self-Assessment and Actual Score in Bristol, UK

Self-Assessment - Bristol	FL Score	FL Level
Very High	27.2	High
Quite High	26.8	High
About Average	25.0	High
Quite Low	20.4	Low
Very Low	19.7	Low
Do Not Know	15.5	Low

Note: Green colour indicates high level while red colours represents low level.

According to Table 55 the participants who indicated that they have average or greater financial knowledge have got a high level of financial literacy, while the participants who think their financial knowledge is below average, also have a low level of financial literacy.

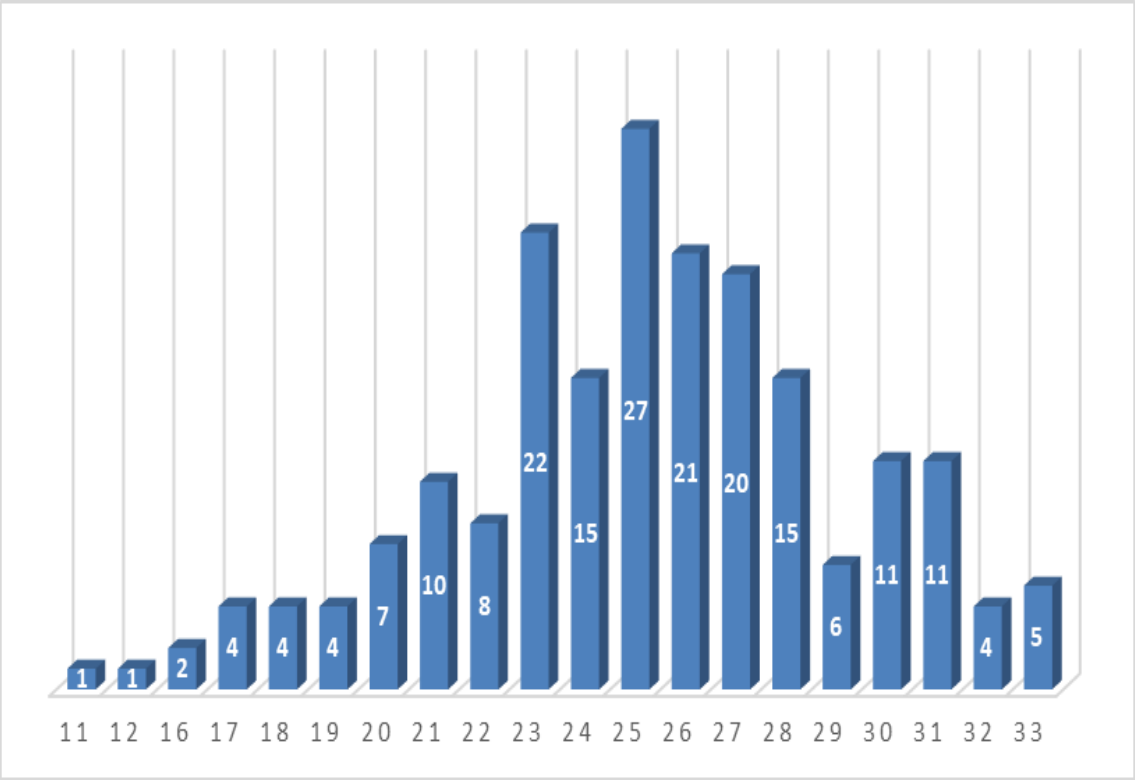
Young adults in Bristol who have quite high and very high perceived financial knowledge are slightly over the average financial literacy. They are not aware of their actual financial knowledge. Therefore they could ignore financial education unless they realize their actual financial knowledge. On the other hand, young adults in Bristol

who think they have average or low level of financial knowledge are aware of their shortcomings about financial literacy. Therefore, financial education should start to increase the financial literacy level of Bristol rapidly for these groups of young adults.

5.4.4. Financial Literacy Score of Istanbul

The financial literacy score for participants in Istanbul was measured in this section. Table 56 shows the financial literacy scores of participants in Istanbul. The maximum financial literacy score is 40.

Table 56: Financial Literacy Score of Istanbul



According to Table 56, the most frequent financial literacy score (given to 27 participants) is 25. 22 participants' financial literacy score is 23 points. 21 participants' financial literacy score is 26, and 20 participants have a financial literacy score of 27 points. The highest financial literacy score, which is 33 points, was given to 5

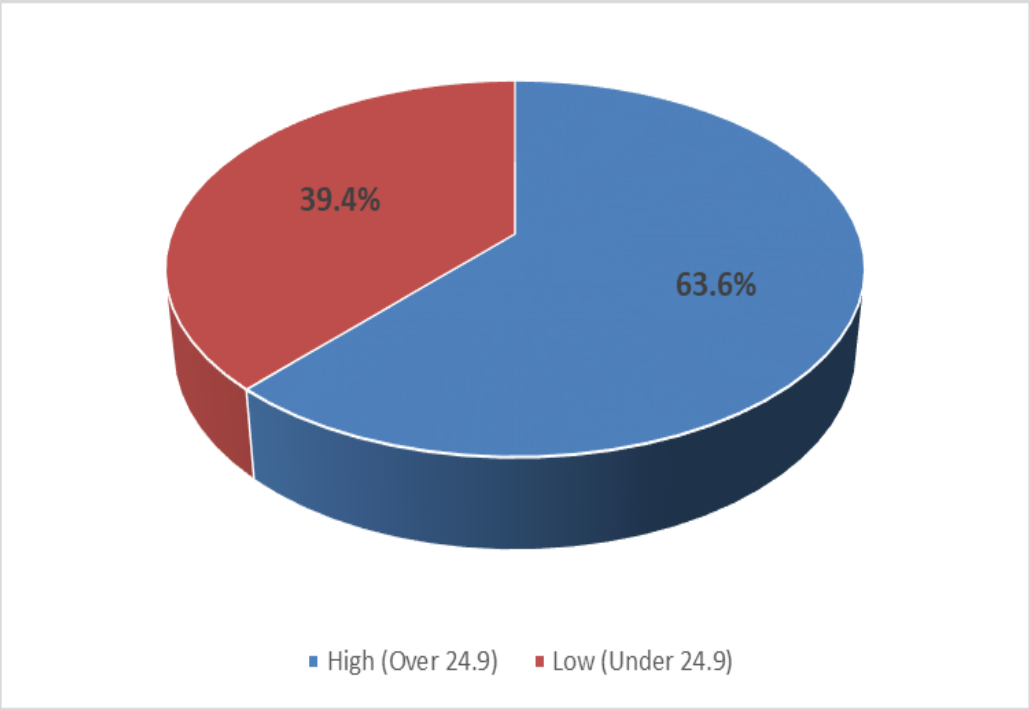
participants in Istanbul. In contrast, the lowest financial literacy score, which is 11 points, was given to 1 participant.

The financial literacy level of young adults in Istanbul is slightly over the average (25.2 out of 42.00). Compound interest, risk diversification, time value of money and calculation of interest plus principle were lesser-known subjects in Istanbul. It can be said that they do not have sufficient knowledge about advanced financial issues even if they have knowledge about basic financial issues. As a result of this, their financial knowledge is slightly over the average. Young adults' financial knowledge about complex financial issues should be improved to raise the financial literacy level of them (Turkey Economy Bank, 2017). The lack of knowledge of young adults about compound interest in Istanbul may be an obstacle to getting higher returns. At the same time, as stated in the financial behaviour section, it indicates that they may have difficulty in maintaining the balance between income and expense, as they are insufficient in preparing budget (Lusardi and Scheresberg, 2013). Therefore, the level of borrowing may increase. Additionally, it shows that when they face with unexpected expenses, they are not able to pay off without asking friends or family to help, as stated in the financial behaviour section. For this kind of reasons, their financial literacy level may have decreased. The financial behaviour of young adults can be improved when their lack of financial knowledge is sorted out (Mandell, 2016). Financial education for young adults in Istanbul should include advanced finance issues such as savings strategies, debt management, the importance of preparing a budget.

Table 57 shows the financial literacy level of participants in Istanbul. If the participants' financial literacy score in Istanbul is more than 24.9 points, it means that they have a high level of financial literacy; otherwise, they have a low level of financial literacy.

Blue shows a high financial literacy level, while red indicates a low financial literacy level.

Table 57: Financial Literacy Level of Istanbul



According to Table 57, 63.3% of participants in Istanbul have a high level of financial literacy, while 39.4% of participants have a low level of financial literacy. In other words, 120 participants' financial literacy scores are over the average financial literacy score, while 78 participants' financial literacy scores are lower than the average financial literacy score in Istanbul.

Table 58 compares the financial literacy score and financial literacy level of participants in Istanbul.

Table 58: Financial Literacy Score by Demographic Variables in Istanbul

Demographic Variables - Istanbul	FL Score	Level
Male	25.2	High
Female	25.1	High
Postgraduate education or equivalent (e.g. master's degree, PhD or advanced professional training)	26.3	High
University-level education (e.g. degree or higher level vocational training)	25.2	High
Upper secondary school or high school	22.9	Low
Lower secondary school or middle school (where relevant)	17.0	Low
Single	25.2	High
Married	25.2	High
In paid employment (work for someone else)	25.3	High
Self-employed (work for yourself)	26.5	High
Student	24.7	Low
Unable to work due to sickness or ill-health	22.0	Low
£0 – £9999	24.4	Low
£10000 – £19999	22.5	Low
£20000 – £29999	25.8	High
£30000 – £39999	28.6	High
£40000 – £59999	25.4	High
£60000+	19.8	Low

Note: Green colour indicates high level while red colours represents low level.

According to Table 58, the financial literacy levels of females and males in Istanbul is high. The financial literacy score of males is 0.1 points more than that of females. The financial literacy level of participants who have a postgraduate and university-level education is high, while the financial literacy level of participants who have upper secondary or high school and lower secondary and middle school level education is low. However, married participants' financial literacy score in Istanbul (25.2) is equal to the financial literacy score of single participants (25.2). Additionally, both categories

have a high level of financial literacy. The financial literacy level of participants who are employed or self-employed is high, while the financial literacy of participants who are students or unable to work due to sickness or ill-health is low. The participants who have an income level between £20,000 and £59,999 have a high level of financial literacy.

In general, male young adults in Istanbul have higher financial literacy level than females. The lower level of financial literacy of women in Istanbul can have significant consequences. Women are generally exposed to lower wages throughout their lives. Their careers are interrupted for childcare. They also live longer than men. For these reasons, it will be an advantage for them to have a higher level of financial literacy than men. Therefore, increasing the financial knowledge of females and equipping them with tools to make proper financial decisions should be a priority for policymakers (Bucher-Koenen's *et al*., 2014). Also, there is a positive relationship between financial literacy and young adults' education level (Lusardi *et al*., 2014; Ergun, 2017). Young adults who have higher education in Istanbul have higher financial literacy. In this context, placing the financial knowledge-enhancing courses in the education curriculum, providing students with the opportunity to perform application studies related to their learning may further increase their financial knowledge and competencies. Married and single young adults in Istanbul have the same level of financial literacy. There are no differences between them. Young adults who work for themselves have a higher financial literacy level in Istanbul. Students have a low level of financial literacy in Istanbul (Jorgensen, 2007).

In summary, male young adults who have a postgraduate degree and work for themselves have highest financial literacy while female young adults who have lower

secondary school education and unable to work due to sickness or ill-health have lowest financial literacy level.

Table 59 compares self-assessment financial knowledge and the actual score of participants in Istanbul.

Table 59: The Comparison of Financial Literacy Self-Assessment and Actual Score in Istanbul

Self-Assessment - Istanbul	FL Score	FL Level
Very High	26.9	High
Quite High	26.4	High
About Average	24.9	High
Quite Low	21.4	Low
Very Low	17.3	Low

Note: Green colour indicates high level while red colours represents low level.

According to Table 59, participants who think that they have a high level of financial knowledge also have the highest financial literacy score (26.9). The participants who assessed their financial knowledge as very low, have the lowest financial literacy score (17.3). The individuals who consider that they have an average or greater financial knowledge have a high level of financial literacy, while the individuals who assessed their knowledge as below average also have a low level of financial literacy.

The financial literacy level of young adults in Istanbul who think they have quite high (26.4) or very high (26.9) financial knowledge is slightly over the average. Basically, they are not aware of their actual financial knowledge. However, most of the young

adults in Istanbul aware of their shortcomings about financial knowledge. If these kinds of young individuals are willing to improve their financial knowledge, it would be easy to educate them.

In the following section, financial literacy scores and financial literacy levels were compared.

5.5. The Comparison of the Financial Literacy Scores and Levels

In this section, financial literacy scores and financial literacy levels were compared using demographic variables. Table 60 compares the financial literacy scores.

Table 60: The Comparison of Financial Literacy Score

City	FL Score
Istanbul	25.2
Bristol	24.8
Average	24.9

According to Table 60, the average financial literacy score is 24.9 points. Even though participants in Istanbul have a higher financial literacy score than the participants in Bristol, the financial literacy scores of both cities are close. The difference between financial literacy scores is only 0.4 points.

In general, young adults financial literacy level is slightly over the average. This result is similar with OECD (2015). According to OECD (2015), the financial literacy level of UK is slightly under the average while financial literacy level of Turkey is slightly over the average. This study shows that financial literacy level of Bristol is slightly under the average while financial literacy level of Istanbul slightly over the average. It is proved

that the financial literacy problem is not only an issue for developing economies but also the problem of developed economies (Zucci, 2019).

Table 61 compares the participants' financial literacy scores using demographic variables.

Table 61: The Comparison of Demographic Variables and Financial Literacy

	Bristol		Istanbul		All Participants	
Demographic Variables	**FL Score**	**FL Level**	**FL Score**	**FL Level**	**FL Score**	**FL Level**
Male	24.6	Low	25.2	High	24.9	High
Female	25.0	High	25.1	High	25.0	High
Postgraduate education or equivalent (e.g. master's degree, PhD or advanced professional training)	25.9	High	26.3	High	25.8	High
University-level education (e.g. degree or higher level vocational training)	24.7	Low	25.2	High	24.9	High
Upper secondary school or high school	23.6	Low	22.9	Low	23.3	Low
Lower secondary school or middle school (where relevant)	27.0	High	17.0	Low	22.0	Low
Single	24.0	Low	25.2	High	24.5	Low
Married	26.1	High	25.2	High	25.6	High
Divorced	-	-	-	-	21.0	Low
In paid employment (work for someone else)	24.9	High	25.3	High	25.1	High
Self-employed (work yourself)	26.7	High	26.5	High	26.6	High
Student	24.3	Low	24.7	Low	24.3	Low
Unable to work due to sickness or ill-health	-	-	22.0	Low	22.0	Low
Unemployed	21.8	Low	-	-	21.8	Low
£0 – £9999	24.3	Low	24.4	Low	24.3	Low
£10000 – £19999	20.7	Low	22.5	Low	21.4	Low

£20000 – £29999	24.9	High	25.8	High	25.2	High
£30000 – £39999	29.7	High	28.6	High	29.2	High
£40000 – £59999	30.3	High	25.4	High	26.8	High
£60000+	11.0	Low	19.8	Low	18.0	Low

Note: Green colour indicates high level while red colours represents low level.

According to Table 61, the male participants in Bristol have a low financial literacy level, and their financial literacy score is 24.6, which is below the average financial literacy score (24.9). The financial literacy level of both males and females in Istanbul is higher than the financial literacy level of males and females in Bristol. Upper secondary or high school participants' financial literacy is low in both cities, while postgraduate education level participants' financial literacy level is high in both cities. Lower secondary or middle school participants' financial literacy level is high in Bristol. In contrast, lower secondary or middle school participants' financial literacy level is low in Istanbul. The financial literacy level of participants with university-level education is high in Istanbul while university-level participants' financial literacy level is low in Bristol. Married participants' financial literacy level is high in both cities, but the married participants in Bristol have a higher financial literacy score (26.1) than those in Istanbul (25.2). Single participants in Bristol have a low level of financial literacy, while single participants in Istanbul have a high financial literacy level. The financial literacy level of participants who are self-employed or employed is high, while the other categories have a low level of financial literacy in both cities. However, self-employed participants in Bristol have a higher financial literacy score (26.7) than those in Istanbul (26.5), while the financial literacy score of individuals working for someone else in Istanbul (25.3), is higher than those in Bristol (24.9). The participants who earn between £20,000 and £59,999 have a high level of financial literacy in both cities, while participants with other income levels have a low level of financial literacy.

In general, there are differences between financial literacy and gender depending, on the culture. Females have higher financial literacy level than males in Bristol. Conversely, males have higher financial literacy level than females in Istanbul. This result is similar with GFLEC (2017). There are differences between financial literacy and education level, depending on the culture. It can be said that increasing education level for young adults in both Bristol and Istanbul in general increases financial literacy level of them (Mandell and Klein, 2009). There are differences between financial literacy and marital status depending, on the culture. The financial literacy level of single young adults in Bristol is low while it is high in Istanbul. Single young adults in Istanbul are expected to exhibit better financial behaviour than Bristol (Lusardi and Mitchell, 2008). Generally, students have a low level of financial literacy regardless of culture. Additionally, young adults who work for themselves have higher financial literacy. Also, there were not enough participants who have £40,000 or over income that is why their financial literacy level is low. Therefore, it can be said there is a positive relationship between income level and financial literacy for both cultures (Gokmen, 2012).

Table 62 compares self-assessment financial knowledge and an actual score of participants in Bristol and Istanbul.

Table 62: The Comparison of Self-Assessment of Financial Knowledge and Financial Literacy

	Bristol		Istanbul		Total	
Self-Assessment	**FL Score**	**FL Level**	**FL Score**	**FL Level**	**FL Score**	**FL Level**
Very High	27.2	High	26.9	High	27.1	High
Quite High	26.8	High	26.4	High	26.5	High
About Average	25.0	High	24.9	High	24.9	High
Quite Low	20.4	Low	21.4	Low	20.7	Low
Very Low	19.7	Low	17.3	Low	18.5	Low
Do Not Know	15.5	Low	-	-	15.5	Low

Note: Green colour indicates high level while red colours represents low level.

As Table 62 highlights, participants who think they have an average or greater financial knowledge also have a high level of financial literacy, while the participants who assessed their financial knowledge as being below average have a low level of financial literacy. The participants in Bristol who thought that they had an average or greater level of financial knowledge, also had a higher financial literacy score than those in Istanbul who thought that they had an average or greater level of financial knowledge.

In general young adults' financial literacy level is slightly over the average. For both cultures, young adults who think that they have quite high or very high financial knowledge have slightly over the average financial literacy. They are not aware of their actual knowledge. It may be difficult for these people to achieve the purpose of financial education unless they realize their actual financial knowledge. However, most of the young adults are aware of their actual financial knowledge. Firstly, starting to

educate these kinds of young adults financially can increase the level of financial literacy in both cities (Mandell, 2016).

In the following section, behavioural biases of participants were analysed.

5.6. Analysis of Behavioural Biases

In this section, behavioural biases of young individuals in Bristol and Istanbul were analysed in details. Table 63 shows the behavioural biases score and behavioural biases level of young individuals in Bristol and Istanbul.

Table 63: Behavioural Biases Score and Level in Bristol, UK and Istanbul

Behavioural Biases	Total	High (above average)	Low (below average)
Representativeness	3.6	49.8%	50.2%
Confirmation	4.0	71.8%	28.2%
Hindsight	3.4	53.0%	47.0%
Self-attribution	3.3	44.1%	55.9%
Anchoring	4.0	79.8%	20.0%
Conservatism	4.0	79.5%	20.3%
Over-optimism	4.1	30.0%	69.8%
Availability/Salience/Cue competition	3.9	59.9%	39.9%
Cognitive dissonance	3.6	63.7%	36.1%
Framing	4.4	69.1%	30.7%
Illusion of knowledge	3.9	59.2%	40.6%
Illusion of control	4.0	74.3%	25.5%
Categorisation	4.0	79.5%	20.3%
Loss aversion	4.3	47.8%	52.0%

Overconfidence	3.8	60.4%	39.4%

According to Table 63, the most common behavioural biases among young adults in Bristol and Istanbul are anchoring (79.8% of the participants), conservatism (79.5% of the participants), categorisation (79.5% of the participants), and the illusion of control (74.3% of the participants). In contrast, the least common behavioural biases among participants in Bristol and Istanbul are over-optimism (30.0% of the participants), self-attribution (44.1% of the participants), loss aversion (47.8% of the participants), and representativeness (49.8% of the participants). The highest behavioural bias score belongs to framing bias (4.4), while the lowest behavioural bias score is self-attribution bias (3.3).

When young adults in Bristol and Istanbul try to predict a situation, they imagine a predetermined initial value in their minds. This value is their reference point. They tend to create a reference point based on the first knowledge they have experienced or learned. They analyse the knowledge that comes out later and corrects their estimates up or down. Regardless of how the starting points are chosen, it is seen that they usually correct their estimates insufficiently (Pompian, 2011). This situation leads to the occurrence of conservatism bias as well as anchoring bias (Montier, 2007). Although young adults in Bristol and Istanbul accept new knowledge, they are more dependent on their old views and expectations. For this reason, young adults exhibit underreact to new knowledge. This situation leads to decision making with biases (Barberis and Thaler, 2002). In addition, young adults in Bristol and Istanbul tend to divide objects into general groups and ignore differences between members of the same group. This bias very common among individuals (Shefrin, 2010). For example, when investing in portfolios, they first divide assets into broad categories such as

government bonds and venture capital and then share funds between these categories. At the same time, young adults in Bristol and Istanbul tend to believe they can, or at least affect the results of the events, although they cannot control the results of the events. In other words, young adults tend to believe they have effects on the outcomes of uncontrollable events (Pompian, 2011). For example, although the lottery is entirely dependent on luck, it has been observed that one's perception of the possibility of winning or losing lottery depending on whether he/she chooses the ticket himself/herself or someone else gave it. Individuals who were given a chance to choose a lottery ticket, they behave as if they had control over the lottery result. (Montier, 2007).

Table 64 reveals the behavioural biases level of participants in Bristol.

Table 64: Behavioural Biases Score and Level of Bristol, UK

Behavioural Biases	**Bristol, UK**	**High (above average)**	**Low (below average)**
Representativeness	3.5	64.5%	35.5%
Confirmation	4.0	68.0%	32.0%
Hindsight	3.3	50.2%	49.8%
Self-attribution	3.3	44.3%	55.7%
Anchoring	4.0	76.8%	23.2%
Conservatism	3.9	73.4%	26.6%
Over-optimism	4.0	81.8%	18.2%
Availability/Salience/Cue competition	3.8	55.7%	44.3%
Cognitive dissonance	3.4	59.6%	40.4%
Framing	4.2	66.5%	33.5%
Illusion of knowledge	3.8	53.7%	46.3%

Illusion of control	4.0	70.0%	30.0%
Categorisation	4.0	76.8%	23.2%
Loss aversion	4.2	44.8%	55.2%
Overconfidence	3.7	55.7%	44.3%

According to Table 64, over-optimism (81.8% of the participants), anchoring (76.8% of the participants), categorisation (76.8% of the participants) and conservatism (73.4% of the participants) are the most common behavioural biases for participants in Bristol. However, self-attribution (44.3% of the participants), loss aversion (44.8% of the participants), hindsight (50.2% of the participants), cue competition (55.7% of the participants) and overconfidence (55.7% of the participants) are less common behavioural biases seen for participants in Bristol. The highest behavioural biases score in Bristol belongs to framing and loss aversion biases (both score 4.2) while the lowest behavioural bias score belongs to self-attribution and hindsight biases (both score 3.3).

The most of young adults in Bristol prefer to invest in companies they work with or those operating in the geographic area they live. At the same time, they focus more on promising knowledge about the companies they invest. Because they behave over-optimisticaly about their companies and their geographical regions (Pompian, 2006). Therefore, the financial decisions they make include biases. At the same time, young adults in Bristol rely heavily on the first knowledge they make when making a decision, and they are influenced by this knowledge in their subsequent decisions. For example, when an adult in Bristol wants to buy a house, the price creates a reference point for that house. If he/she buys this house under the reference point, he/she will be happy. However, the same type of houses can be found in the market much cheaper. Since there is not enough market research, this decision is made with the anchoring bias

(Shefrin, 2010). This first knowledge that young adults have learned in Bristol has been their reference point. They may exhibit underreaction to new knowledge. They adhere more to their old opinions and beliefs (Pompian, 2011). This shows that young adults in Bristol have made decisions with a conservatism bias. At the same time, young adults in Bristol make financial decisions by classifying them in line with their beliefs. They tend to classify their investments as good and bad. A well-classified investment is not evaluated in the bad category immediately after it starts to lose value (Barberis and Shleifer, 2003).

Table 65 shows the behavioural biases levels of participants in Istanbul.

Table 65: Behavioural Biases Score and Level of Istanbul

Behavioural Biases	**Istanbul**	**High (above average)**	**Low (below average)**
Representativeness	3.7	55.1%	44.9%
Confirmation	4.1	35.4%	64.6%
Hindsight	3.5	57.1%	42.9%
Self-attribution	3.2	44.4%	55.6%
Anchoring	4.1	28.3%	71.7%
Conservatism	4.2	32.8%	67.2%
Over-optimism	4.2	34.3%	65.7%
Availability/Salience/Cue competition	3.9	65.2%	34.8%
Cognitive dissonance	3.8	68.7%	31.3%
Framing	4.5	72.7%	27.3%
Illusion of knowledge	4.0	65.7%	34.3%
Illusion of control	4.1	42.4%	57.6%
Categorisation	4.2	39.9%	60.1%
Loss aversion	4.4	51.5%	48.5%

Overconfidence	4.0	66.2%	33.8%

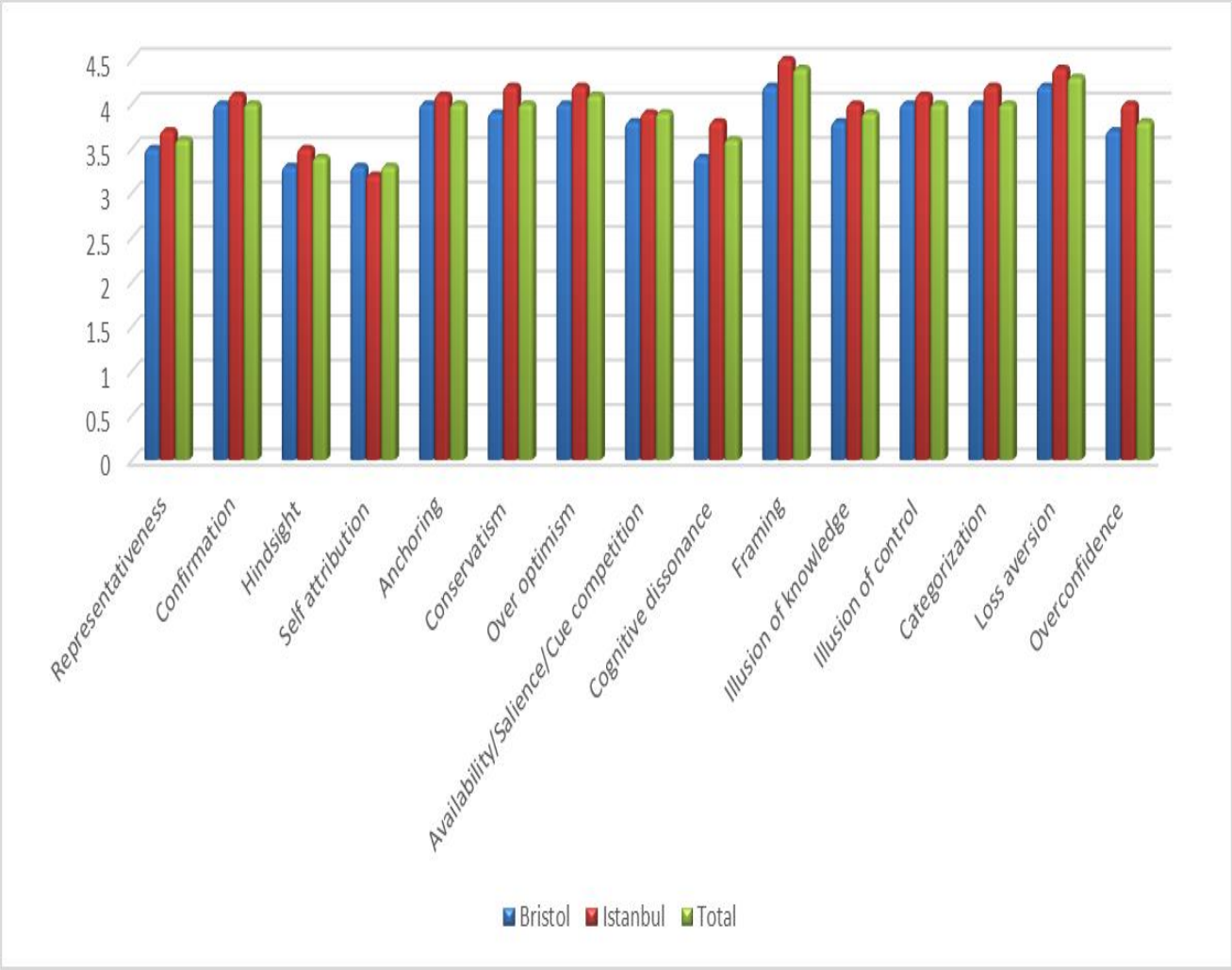
According to Table 65, the most common behavioural biases for participants in Istanbul are framing (72.7% of the participants), cognitive dissonance (68.7% of the participants), the illusion of knowledge (65.7% of the participants) and cue competition (65.2% of the participants). However, the less common behavioural biases seen for participants in Istanbul are anchoring (28.3% of the participants), conservatism (32.8% of the participants), over-optimism (34.3% of the participants) and confirmation (35.4% of the participants). The highest behavioural bias score in Istanbul belongs to framing bias (4.5), while the lowest behavioural bias score is for self-attribution bias (3.2).

Young adults in Istanbul tend to respond to different situations in different ways, depending on the circumstances under which the option is offered. They are more sensitive to losses than to earnings. Therefore, the situation presented in a frame that emphasizes the losses does not make attractive to them. The same option becomes more attractive when the earning is highlighted (Shefrin, 2010). In short, the presentation of events affects the way in which young people in Istanbul perceive the outputs and facts. At the same time, young adults in Istanbul feel uncomfortable when they learn new information contradicts with the previous ones. For example, they know that smoking causes lung cancer and heart disease but they want to live long. At this point, smoking and willingness of long living contradict with each other since smoking makes life shorter. However, they justify smoking because they reduce stress (Pompian, 2011). Therefore, young adults in Istanbul can change their thoughts to justify their past actions. Young adults in Istanbul believe that the accuracy of their predictions will increase with more knowledge. So they want to know more than anyone knows. In reality, however, individuals make the same decision regardless of the amount of knowledge they have. Every learned knowledge reinforces the sense of

trust of individuals (Montier, 2007). Young adults in Istanbul consider the more noticeable clues when making decisions and ignore less noticeable ones. In other words, among the many variables that may be related to the decision, not the right one, but the more obvious one has been chosen. At the same time, young adults in Istanbul can choose to invest based on their feelings rather than the right one (Oran, 2008).

Table 66 compares the behavioural biases scores among participants in Bristol and Istanbul. The average score of the responses given by the participants constituted the behavioural bias score. Scores which are below average score show a low level of behavioural bias, while scores which are over average indicate a high level of behavioural bias. The blue bar shows the behavioural biases score of the Bristol participants, while the red bar indicates the behavioural biases score of the Istanbul participants. The green bar shows the behavioural biases score of all participants.

Table 66: The Comparison of Behavioural Biases Score



As Table 66 shows, the behavioural biases scores of participants in Istanbul are higher than those seen for Bristol participants. Framing bias has the highest score, while self-attribution bias has the lowest score for both cities. Participants in Bristol and Istanbul tend to exhibit framing and loss aversion biases, but they are generally less affected by the self-attribution and hindsight biases.

Table 67 compares participants' behavioural biases scores in Bristol and Istanbul by gender. The green highlight shows a high level of behavioural bias and the red highlight indicates a low level of behavioural bias.

Table 67: The Comparison of Behavioural Biases by Gender

	Bristol		Istanbul		Total	
Behavioural Biases	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Representativeness	3.5	3.6	3.7	3.8	3.6	3.7
Confirmation	3.9	4.0	4.0	4.1	4.0	4.1
Hindsight	3.2	3.4	3.4	3.5	3.3	3.5
Self-attribution	3.2	3.3	3.3	3.2	3.3	3.3
Anchoring	4.0	4.0	4.0	4.2	4.0	4.1
Conservatism	3.8	4.0	4.0	4.3	3.9	4.1
Over-optimism	4.1	3.9	4.1	4.3	4.1	4.1
Availability/Salience/Cue competition	3.9	3.8	3.9	4.0	3.9	3.9
Cognitive dissonance	3.4	3.4	3.7	3.8	3.5	3.6
Framing	4.1	4.3	4.5	4.5	4.3	4.4
Illusion of knowledge	3.7	3.8	4.1	4.0	3.9	3.9
Illusion of control	3.9	4.0	4.2	4.1	4.0	4.0
Categorisation	3.9	4.0	4.3	4.1	4.0	4.0
Loss aversion	4.2	4.2	4.4	4.4	4.3	4.3
Overconfidence	3.7	3.7	3.9	4.0	3.8	3.9

Note: Green colour indicates high level while red colours represents low level.

According to Table 67, male participants in Bristol have a low level of behavioural biases, excluding anchoring, over-optimism and cue competition biases. The male participants in Bristol have a high-level bias for over-optimism (4.1), but their behavioural bias level is low for hindsight and self-attribution (both scoring 3.2). Although the highest behavioural biases score among female participants in Bristol is framing (4.3), their framing bias level is low. In contrast, the lowest behavioural biases score among female participants in Bristol is self-attribution (3.3).

Male participants in Istanbul have a high level of behavioural biases. Framing bias (4.5) is the highest score for the male participants in Istanbul, while self-attribution (3.3) is the lowest score for this group. Female participants in Istanbul have a high level of behavioural biases, excluding self-attribution. The highest behavioural bias

score for female participants in Istanbul is framing bias (4.5) while self-attribution bias has the lowest score among female individuals in Istanbul.

In general, framing and loss aversion have the highest behavioural bias score for male participants, with both biases scoring 4.3, whereas hindsight and self-attribution have the lowest behavioural bias score for this group. Female participants have the highest framing bias score (4.4) while self-attribution bias (3.3) is the lowest score for this group.

Culture affects behavioural biases of young adults. Male young adults in Bristol have a low level of behavioural biases while male young adults in Istanbul have a high level of behavioural biases. According to Frederick's (2005) study male behavioural bias level is higher than females. Female young adults in Bristol have a low level of behavioural biases while female young adults in Istanbul have a high level of behavioural biases. Behavoiural bias level of young adults in Istanbul is higher than in Bristol.

Table 68 compares the behavioural biases scores of participants in Bristol and Istanbul by education level. The green highlight shows a high level of behavioural bias and the red highlight indicates a low level of behavioural bias.

Table 68: The Comparison of Behavioural Biases by Education

	Bristol				Istanbul				Total			
Behavioural Biases	Postgraduate education or equivalent (e.g. master's degree, PhD or advanced professional training)	University-level education (e.g. degree or higher level vocational training)	Upper secondary school or high school	Lower secondary school or middle school (where relevant)	Postgraduate education or equivalent (e.g. master's degree, PhD or advanced professional training)	University-level education (e.g. degree or higher level vocational training)	Upper secondary school or high school	Lower secondary school or middle school (where relevant)	Postgraduate education or equivalent (e.g. master's degree, PhD or advanced professional training)	University-level education (e.g. degree or higher level vocational training)	Upper secondary school or high school	Lower secondary school or middle school (where relevant)
Representativeness	3.3	3.6	3.5	5.0	3.6	3.7	4.2	4.5	3.4	3.7	3.8	4.8
Confirmation	4.1	4.3	3.8	4.0	4.3	4.0	4.2	4.0	4.2	4.0	4.0	4.0
Hindsight	3.8	3.3	2.8	5.0	3.4	3.6	2.9	1.0	3.6	3.4	2.8	3.0
Self-attribution	3.1	3.3	3.0	5.0	3.3	3.2	3.6	2.0	3.2	3.3	3.3	3.5
Anchoring	4.3	4.0	3.8	4.0	4.0	4.1	4.2	4.0	4.1	4.0	3.9	4.0
Conservatism	3.8	4.0	3.7	5.0	4.0	4.2	4.0	4.0	3.9	4.1	3.8	4.5
Over-optimism	4.0	4.0	4.0	4.0	4.2	4.2	3.9	4.0	4.0	4.1	4.0	4.0
Availability/Salience/Cue competition	3.6	3.9	3.5	4.5	3.8	4.0	3.7	4.5	3.7	4.0	3.6	4.5
Cognitive dissonance	2.6	3.7	3.2	5.0	3.6	3.9	3.4	5.0	3.1	3.8	3.3	5.0
Framing	3.9	4.3	4.1	4.5	4.4	4.5	4.4	4.0	4.1	4.4	4.3	4.3
Illusion of knowledge	3.4	3.9	3.6	4.0	3.5	4.2	4.2	2.5	3.5	4.0	3.9	3.3
Illusion of control	3.8	4.0	3.9	3.0	3.8	4.2	4.2	4.0	3.8	4.1	4.0	3.5
Categorisation	4.1	3.9	4.1	3.0	4.0	4.3	3.7	4.0	4.0	4.1	4.0	3.5
Loss aversion	4.2	4.2	4.2	4.0	4.4	4.4	4.5	5.0	4.3	4.3	4.3	4.5
Overconfidence	3.5	3.7	3.7	4.0	4.0	4.0	3.9	4.5	3.7	3.9	3.8	4.3

Note: Green colour indicates high level while red colours represents low level.

According to Table 68, participants in Bristol who have a postgraduate level of education have a low level of behavioural bias compared to participants in Istanbul with a postgraduate education level. Cognitive dissonance bias is the lowest score among the participants who have a postgraduate education level in Bristol, while self-attribution bias is the lowest score among participants in Istanbul who have a postgraduate education level. The highest behavioural bias score for participants who have a postgraduate education level in Bristol belongs to anchoring bias (4.3), whereas framing (4.4) and loss aversion (4.4) biases have the highest score for this group in Istanbul. University-level participants' behavioural biases levels for those in Istanbul are higher than for those in Bristol. Upper secondary or high school level participants in Bristol have a lower level of behavioural biases than this group in Istanbul. In general, participants who have a university-level education have a high level of behavioural biases, while participants who have a postgraduate level of education have a low level of behavioural biases.

In general, behavioural biases of young adults are affected by culture instead of education level. Most of the young adults in Bristol who have postgraduate degree exhibit low level of behavioural biases while most of the young adults in Istanbul who have postgraduate degree have a high level of behavioural biases. At the same time, young adults in Bristol who have lower secondary school education have the highest level of behavioural biases while young adults in Istanbul who have university degree have the highest level of behavioural biases. It can be said that behavioural bias level of young adults in Bristol is lower than Istanbul. High level of education increases financial literacy but does not affect behavioural biases. To reduce the behavioural biases of young adults, awareness of them should be increased (Sezer and Demir, 2015).

Table 69 shows the behavioural biases levels and scores for participants in Bristol and Istanbul by marital status. The green highlight shows a high level of behavioural bias and the red highlight indicates a low level of behavioural bias.

Table 69: The Comparison of Behavioural Biases by Marital Status

	Bristol		**Istanbul**		**Total**	
Behavioural Biases	Single	Married	Single	Married	Single	Married
Representativeness	3.4	3.7	3.8	3.6	3.6	3.6
Confirmation	3.9	4.0	4.1	4.1	4.0	4.1
Hindsight	3.2	3.5	3.6	3.4	3.4	3.4
Self-attribution	3.2	3.4	3.4	3.0	3.3	3.2
Anchoring	3.9	4.2	4.1	4.1	4.0	4.2
Conservatism	3.7	4.2	4.2	4.2	3.9	4.2
Over-optimism	3.9	4.2	4.2	4.2	4.0	4.2
Availability/Salience/Cue competition	3.7	4.0	4.1	3.8	3.9	3.9
Cognitive dissonance	3.2	3.7	4.0	3.4	3.6	3.6
Framing	4.0	4.5	4.5	4.4	4.3	4.5
Illusion of knowledge	3.7	3.9	4.1	3.9	3.9	3.9
Illusion of control	3.8	4.1	4.1	4.2	4.0	4.1
Categorisation	3.7	4.3	4.2	4.1	4.0	4.2
Loss aversion	4.1	4.4	4.4	4.3	4.2	4.4
Overconfidence	3.5	3.9	4.0	3.9	3.6	3.9

Note: Green colour indicates high level while red colours represents low level.

According to Table 69, single participants in Bristol have a low level of behavioural biases. The highest bias score of single participants in Bristol is loss aversion (4.1), while hindsight (3.2), self-attribution (3.2) and cognitive dissonance (3.2) bias scores are the lowest bias scores. The highest behavioural bias score of married participants

in Bristol and single participants in Istanbul is the framing bias score (4.5). The lowest bias score for married participants in Bristol is the hindsight bias score, which is 3.5. The lowest behavioural bias score of single and married participants in Istanbul is self-attribution bias (3.4 and 3.0, respectively). Framing (4.4) bias score is the highest behavioural biases score for married participants in Istanbul. In general, married participants in Bristol and single participants in Istanbul have a high level of behavioural biases. The self-attribution bias score is the lowest bias for single (3.3) and married (3.2) participants while the framing bias score is the highest bias score for single (4.3) and married (4.5) participants.

In general, single young adults have a low level of behavioural biases. All single young adults in Bristol have a low level of behavioural biases while all single young adults in Istanbul a have high level of behavioural biases in Istanbul. At the same time, all married young adults in Bristol have a high level of behavioural biases while most of the married young adults in Istanbul a have high level of behavioural biases in Istanbul.

Table 70 compares the behavioural biases scores by participants' education level in Bristol and Istanbul.

Table 70: The Comparison of Behavioural Biases by Work Status

	Bristol				Istanbul				Total			
Behavioural Biases	In paid employment (work for someone else)	Self-employed (work for yourself)	Student	Unemployed	In paid employment (work for someone else)	Self-employed (work for yourself)	Student	Unemployed	In paid employment (work for someone else)	Self-employed (work for yourself)	Student	Unemployed
Representativeness	3.6	3.3	3.4	3.0	3.7	3.4	4.0	-	3.6	3.4	3.7	3.0
Confirmation	4.0	3.9	4.1	3.6	4.1	4.4	4.0	-	4.0	4.1	4.0	3.6
Hindsight	3.5	3.5	2.9	3.0	3.3	3.9	3.9	-	3.4	3.6	3.4	3.0
Self-attribution	3.4	3.0	2.8	4.1	3.2	3.9	3.3	-	3.3	3.3	3.0	4.1
Anchoring	4.1	3.9	3.7	4.0	4.0	4.1	4.3	-	4.1	4.0	4.0	4.0
Conservatism	4.1	3.9	3.3	3.6	4.1	3.9	4.4	-	4.1	3.9	3.9	3.6
Over-optimism	4.1	3.9	3.9	3.8	4.2	3.9	4.3	-	4.1	3.9	4.1	3.8
Availability/Salience/Cue competition	3.9	3.5	3.7	4.0	3.8	4.1	4.3	-	3.9	3.7	4.0	4.0
Cognitive dissonance	3.8	3.5	2.1	3.6	3.7	2.9	4.0	-	3.8	3.3	3.1	3.6
Framing	4.5	4.3	3.3	4.2	4.5	4.6	4.5	-	4.5	4.4	3.9	4.2
Illusion of knowledge	3.9	3.5	3.5	3.9	3.9	3.9	4.4	-	3.8	3.6	3.9	3.9
Illusion of control	4.1	3.6	3.5	4.4	4.1	3.6	4.4	-	4.1	3.6	3.9	4.4
Categorisation	4.2	4.0	3.0	4.6	4.1	3.4	4.4	-	4.2	3.7	3.7	4.6
Loss aversion	4.3	4.1	3.9	4.6	4.4	4.3	4.6	-	4.3	4.1	4.2	4.6
Overconfidence	3.9	3.8	2.8	3.7	3.9	3.6	4.1	-	3.9	3.8	3.5	3.7

Note: Green colour indicates high level while red colours represents low level.

According to Table 70, participants who are employed in Bristol and Istanbul have a high level of behavioural biases, while participants in Bristol and Istanbul who are self-employed have low levels of behavioural biases. Framing (4.5) is the highest bias among participants in Bristol and Istanbul who are employed, and self-attribution bias score (3.4 for Bristol, 3.2 for Istanbul, and 3.3 in general) is the lowest score for this group. Self-employed participants and students in Bristol have a lower level of biases than self-employed participants and students in Istanbul. The highest bias score is confirmation (4.1) bias for students in Bristol while loss eversion (4.6) is the highest bias for students in Istanbul. In contrast, cognitive dissonance bias (2.1) is the lowest bias for students in Bristol, while self-attribution (3.3) is the lowest bias for students in Istanbul.

In general, young adults who work for someone else have the highest behavioural biases level. Students in Bristol have low level of behavioural biases while they have high level of behavioural biases in Istanbul.

Table 71 compares behavioural biases scores among participants in Bristol and Istanbul by income level.

Table 71: The Comparison of Behavioural Biases by Income Level

	Bristol						Istanbul						Total					
Behavioural Biases	£0 – £9999	£10000 – £19999	£20000 – £29999	£30000 – £39999	£40000 – £59999	£60000+	£0 – £9999	£10000 – £19999	£20000 – £29999	£30000 – £39999	£40000 – £59999	£60000+	£0 – £9999	£10000 – £19999	£20000 – £29999	£30000 – £39999	£40000 – £59999	£60000+
Representativeness	3.5	3.2	3.6	3.2	3.6	2.0	4.0	3.9	3.6	3.7	3.7	3.3	3.7	3.7	3.6	3.5	3.7	3.0
Confirmation	4.1	3.5	4.0	4.3	4.1	2.0	4.1	3.9	4.1	4.3	4.0	4.3	4.1	3.7	4.0	4.3	4.0	3.8
Hindsight	3.0	2.6	3.4	4.1	4.3	2.0	3.8	2.8	3.5	3.5	3.6	3.5	3.4	2.7	3.4	3.8	3.8	3.2
Self-attribution	2.9	3.2	3.4	3.2	3.0	2.0	3.3	3.4	3.6	3.4	3.1	3.6	3.1	3.3	3.3	3.3	3.1	3.3
Anchoring	3.8	3.4	4.1	4.6	4.5	2.0	4.2	4.2	4.0	4.2	4.0	4.0	4.0	3.8	4.0	4.4	4.1	3.6
Conservatism	3.4	3.5	4.1	4.7	4.0	2.0	4.3	4.1	4.2	3.7	4.0	4.3	3.8	3.9	4.1	4.1	4.0	3.8
Over-optimism	4.0	3.4	4.1	4.5	3.5	2.0	4.3	4.0	4.2	4.2	4.0	3.8	4.1	3.8	4.1	4.3	3.9	3.4
Availability/Salience/Cue competition	3.8	3.2	3.9	3.7	3.6	2.0	4.3	3.9	3.9	3.9	3.5	3.9	4.0	3.6	3.9	3.8	3.5	3.5
Cognitive dissonance	2.3	2.6	3.9	3.3	3.8	2.0	3.9	3.8	3.8	3.5	2.9	2.5	3.1	3.4	3.9	3.4	3.1	2.4
Framing	3.3	4.0	4.5	4.7	4.3	2.0	4.4	4.3	4.6	4.8	4.1	3.6	3.9	4.1	4.6	4.8	4.1	3.3
Illusion of knowledge	3.6	3.1	3.9	3.7	3.0	2.0	4.3	3.9	4.1	3.4	3.7	3.3	3.9	3.6	4.0	3.5	3.5	3.0
Illusion of control	3.6	3.4	4.1	4.3	3.0	2.0	4.3	4.3	4.1	3.8	3.9	4.5	3.9	3.9	4.1	4.0	3.6	4.0
Categorisation	3.2	3.3	4.2	4.7	3.3	2.0	4.4	4.0	4.2	4.4	3.0	3.5	3.8	3.7	4.2	4.5	3.1	3.2
Loss aversion	3.9	3.4	4.4	4.6	4.0	2.0	4.5	4.4	4.5	4.1	4.0	4.0	4.2	4.0	4.4	4.4	4.0	3.6
Overconfidence	2.9	3.3	4.0	4.1	4.0	2.0	4.0	3.8	4.0	4.1	3.9	3.6	3.5	3.6	4.0	4.1	3.9	3.3

Note: Green colour indicates high level while red colours represents low level.

According to Table 71, the £0–£9,999 income level participants in Bristol have a lower level of behavioural bias score than participants in Istanbul. The most common bias among this group in Bristol is confirmation bias (4.1) while the less common bias of this group in Bristol is cognitive dissonance bias (2.3). Loss aversion bias is the highest bias among this group in Istanbul, while self-attribution bias is the less common bias among this group in Istanbul.

£10,000–£19,999 income level participants in Bristol have a lower level of behavioural biases than Istanbul. Framing bias (4.5) is the highest bias for this group in Bristol while loss aversion (4.4) is the highest bias among this group in Istanbul. In contrast, cognitive dissonance bias (2.6) is the lowest bias among this group in Bristol while hindsight bias (2.8) is the lowest bias for this group in Istanbul.

£20,000–£29,999 income level participants in Bristol and Istanbul have a high level of behavioural biases. The most common bias is loss aversion bias (4.4) for Bristol and framing bias (4.6) for Istanbul for this group. In contrast, hindsight bias (3.4) and self-attribution bias (3.4) for Bristol participants and hindsight bias (3.5) for Istanbul participants are the less common biases for this group.

£30,000–£39,999 income level participants in Bristol have the highest level biases for conservatism (4.7), framing (4.7) and categorisation (4.7), while the lowest biases are representativeness (3.2) and self-attribution (3.2). The highest bias for this group in Istanbul is categorisation (4.4), while the lowest biases are the illusion of knowledge (3.4) and self-attribution (3.4).

£40,000–£59,999 income level participants in Bristol have the lowest biases for self-attribution (3.0), the illusion of knowledge (3.0) and the illusion of control (3.0), while

the highest bias is anchoring (4.5). The most common bias in Istanbul is framing (4.1), while the less common bias is cognitive dissonance (2.9).

£60,000+ income level participants in Bristol have a lower level of behavioural biases than those in Istanbul. In general, £20,000–£39,999 income level participants have a high level of behavioural biases, while £10,000–£19,999 and £60,000+ income level participants have a low level of behavioural biases.

In summary, there is a different relationship between the income level of young adults and behavioural biases. Culture is an important factor that effects behavioural biases of young adults instead of income level.

5.7. The Relationship between Financial Literacy and Behavioural Biases

In this section, the results of the ANOVA analysis were described. At the same time, the relationship between behavioural biases and financial litrecay components were investigated. In addition to this, cultural effects on behavioural biases clarified.

5.7.1. General

The descriptive statistics of all participants in Bristol and Istanbul is shown in Table 72.

Table 72: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Financial knowledge	403	1.00	8.00	7.0223	1.32410
Financial attitude	403	1.00	5.00	2.1439	0.96667
Financial behaviour	403	2.00	19.00	9.9926	3.21957
Culture	403	1.00	9.00	5.7866	1.70720

Representativeness	403	1.00	5.00	3.6290	0.85923
Confirmation	403	1.00	5.00	4.0385	0.63804
Hindsight	403	0.00	5.00	3.4069	1.15606
Self-attribution	403	1.00	5.00	3.2519	0.93865
Anchoring	403	1.00	5.00	4.0422	0.85269
Conservatism	403	1.00	5.00	4.0422	0.83797
Over-optimism	403	0.00	5.00	4.0968	0.78103
Availability/Salience/Cue competition	403	1.00	5.00	3.8834	0.74733
Cognitive dissonance	403	0.00	5.00	3.5856	1.42804
Framing	402	1.00	5.00	4.3619	0.82901
Illusion of knowledge	403	1.00	5.00	3.8933	0.93961
Illusion of control	403	0.00	5.00	4.0347	1.03606
Categorisation	403	0.00	5.00	4.0496	1.04502
Loss aversion	403	1.00	5.00	4.3052	0.85731
Overconfidence	403	1.00	5.00	3.8213	0.96085
Valid N (listwise)	402				

As shown in Table 72, 403 out of 415 participants' answers were used in this research. The financial knowledge score is between 1 and 8, with the average financial knowledge score being 7.02. The financial attitude score is between 1 and 5, with the average score being 2.14. The financial behaviour score is between 2 and 19, with the average financial behaviour score being 9.99. The culture score is between 1 and 9, with the average score being 5.79. Most of the behavioural biases scores are between 1 and 5. Some of the behavioural biases scores are 0 because they were not answered by the participants.

Young adults in Bristol and Istanbul have good financial knowledge but their financial behaviour and financial attitude is not good enough. Therefore, they may not increase their financial well-being because some types of financial behaviours and financial

attitudes such as bill payment on time, making a budget, making long-term financial plan, consideriation of purchase products may impact on financial situation of the young individuals (OECD, 2016). In addition to this, they may intend to exhibit unsufficient saving behaviour and may need appropriate plan for expenditures due to focusing on short-term financial goals.

On the other hand, young adults' financial behaviour level is high. The high level of behavioural biases can cause irrational financial decisions (Baker et *al*., 2017). Young individuals in Bristol and Istanbul are exposed the highly categorisation, conservatism and anchoring biases. The objects are sorted by the young adults according to their specific purposes. For example, investments can be perceived as good or bad investment even if it is a new opportunity. Also, young individuals in Bristol and Istanbul adhere their old opinions than new ones. Other opinions may shapped based on old opinions.

Table 73 shows the correlation matrix for all data.

Table 73: Pearson's Correlations

	Financial Knowledge	Financial Attitude	Financial Behaviour	Culture	Representativeness	Confirmation	Hindsight	Self attribution	Anchoring	Conservatism	Over optimism	Availability/Salience/ Cue competition	Cognitive dissonance	Framing	Illusion of knowledge	Illusion of control	Categorization	Loss aversion	Overconfidence
Financial Knowledge	1	-.294**	.460**	.162**	.112*	.255**	.282**	.118*	.323**	.365**	.260**	.158**	.204**	.339**	.164**	0.090	.276**	.244**	.224**
Financial Attitude	-.294**	1	-.328**	-.146**	0.040	-0.059	-.226**	-0.076	-.131**	-.109*	-0.091	-0.092	-.155**	-.178**	-.101*	-0.045	-.229**	-.128*	-.178**
Financial Behaviour	.460**	-.328**	1	.154**	-0.069	.207**	.291**	.126*	.315**	.320**	.318**	.116*	.149**	.249**	0.053	0.087	.245**	.238**	.176**
Culture	.162**	-.146**	.154**	1	.204**	.239**	.153**	.211**	.182**	.173**	.193**	.242**	.115*	.190**	.246**	.193**	.239**	.242**	.127*
Representativeness	.112*	0.040	-0.069	.204**	1	.406**	.161**	.161**	.139**	.207**	.150**	.371**	.146**	.130**	.263**	.214**	.148**	.102*	.170**
Confirmation	.255**	-0.059	.207**	.239**	.406**	1	.238**	.160**	.324**	.253**	.267**	.262**	0.053	.185**	.198**	.196**	.204**	.233**	.120*
Hindsight	.282**	-.226**	.291**	.153**	.161**	.238**	1	.349**	.379**	.355**	.193**	.177**	.217**	.225**	.237**	.204**	.311**	.191**	.299**
Self attribution	.118*	-0.076	.126*	.211**	.161**	.160**	.349**	1	.288**	.228**	.165**	.272**	.266**	.214**	.280**	.272**	.313**	.153**	.317**
Anchoring	.323**	-.131**	.315**	.182**	.139**	.324**	.379**	.288**	1	.527**	.408**	.291**	.190**	.404**	.293**	.308**	.352**	.353**	.317**
Conservatism	.365**	-.109*	.320**	.173**	.207**	.253**	.355**	.228**	.527**	1	.442**	.387**	.299**	.399**	.320**	.285**	.407**	.332**	.326**
Over optimism	.260**	-0.091	.318**	.193**	.150**	.267**	.193**	.165**	.408**	.442**	1	.326**	.235**	.342**	.272**	.365**	.351**	.387**	.217**
Availability/Salience/Cue competition	.158**	-0.092	.116*	.242**	.371**	.262**	.177**	.272**	.291**	.387**	.326**	1	.344**	.331**	.383**	.360**	.250**	.291**	.271**
Cognitive dissonance	.204**	-.155**	.149**	.115*	.146**	0.053	.217**	.266**	.190**	.299**	.235**	.344**	1	.450**	.315**	.326**	.386**	.293**	.309**
Framing	.339**	-.178**	.249**	.190**	.130**	.185**	.225**	.214**	.404**	.399**	.342**	.331**	.450**	1	.480**	.437**	.477**	.559**	.501**
Illusion of knowledge	.164**	-.101*	0.053	.246**	.263**	.198**	.237**	.280**	.293**	.320**	.272**	.383**	.315**	.480**	1	.549**	.421**	.368**	.413**
Illusion of control	0.090	-0.045	0.087	.193**	.214**	.196**	.204**	.272**	.308**	.285**	.365**	.360**	.326**	.437**	.549**	1	.458**	.363**	.386**
Categorization	.276**	-.229**	.245**	.239**	.148**	.204**	.311**	.313**	.352**	.407**	.351**	.250**	.386**	.477**	.421**	.458**	1	.416**	.426**
Loss aversion	.244**	-.128*	.238**	.242**	.102*	.233**	.191**	.153**	.353**	.332**	.387**	.291**	.293**	.559**	.368**	.363**	.416**	1	.370**
Overconfidence	.224**	-.178**	.176**	.127*	.170**	.120*	.299**	.317**	.317**	.326**	.217**	.271**	.309**	.501**	.413**	.386**	.426**	.370**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

According to Table 73, there is a positive and significant relationship between financial knowledge and behavioural biases. There is a 36.5% positive correlation, which is also the highest correlation between financial knowledge and conservatism bias. There is a 9.0% positive correlation, which is also the lowest correlation between financial

knowledge and the illusion of control. There is also a positive and significant correlation between financial knowledge and financial behaviour (46.0%) and culture (16.2%). In contrast, there is a negative and significant correlation between financial knowledge and financial attitude (29.4%).

There are negative and significant correlations between financial attitude and hindsight, anchoring, conservatism, cognitive dissonance, framing, the illusion of knowledge, categorisation, loss aversion and overconfidence, as the Pearson correlation is less than 5% or 1%. There is a 22.9% negative correlation, which is the highest correlation between financial attitude and categorisation. There is a 10.1% negative correlation, which is the lowest correlation between financial attitude and the illusion of knowledge.

There is a positive and significant correlation between financial behaviour and behavioural biases, excluding representativeness, the illusion of knowledge and the illusion of control. There is a 32.0% positive correlation, which is the highest correlation between financial behaviour and conservatism. There is 11.6% positive correlation, which is the lowest correlation between financial behaviour and cue competition.

There is a positive and significant correlation between culture and behavioural biases. There is a 24.6% positive correlation, which is the highest correlation, between culture and illusion of knowledge. There is an 11.5% positive correlation, which is the lowest correlation between culture and cognitive dissonance. In summary, there are significant correlations among variables.

On the other hand, empirical studies are generally faced with spurious correlation or coteries paribus condition (Massa, 2002). It is one of the limitations of this analysis

because there could be spurious correlations among variables. For example, consider the standard test of the effect of familiarity on investment. If an investor is vulnerable to the shocks of his/her local area, he/she is more likely to have more funds available to invest in a stock at a time when local stocks are performing well. If stocks are chosen based on their performance, there is a spurious correlation between portfolio allocation and regional allocation, which can be explained better in terms of income shocks rather than behavioural heuristics.

Table 74 reveals the result of the ANOVA analysis of all participants.

Table 74: ANOVA Analysis Results

	Financial Knowledge			
Behavioural Biases	**Constant**	**Beta**	**P-value**	**Sig.**
Representativeness	2.522	0.111	0.002	0.000
Confirmation	2.657	0.092	0.000	0.000
Hindsight	1.793	0.137	0.004	0.000
Anchoring	2.160	0.139	0.000	0.000
Conservatism	1.927	0.172	0.000	0.000
Over-optimism	2.461	0.081	0.010	0.000
Cognitive dissonance	2.219	0.159	0.009	0.000
Framing	2.727	0.162	0.000	0.000
Illusion of knowledge	2.743	0.101	0.010	0.000
Categorisation	2.453	0.130	0.002	0.000
Loss aversion	2.734	0.094	0.007	0.000
Overconfidence	2.823	0.112	0.006	0.000

	Financial Attitude			
Behavioural Biases	**Constant**	**Beta**	**P-value**	**Sig.**
Hindsight	1.793	-0.134	0.026	0.000
Categorisation	2.453	-0.131	0.016	0.000
Overconfidence	2.823	-0.102	0.050	0.000

	Financial Behaviour			
Behavioural Biases	**Constant**	**Beta**	**P-value**	**Sig.**
Representativeness	2.522	-0.042	0.005	0.000
Confirmation	2.657	0.021	0.000	0.000
Hindsight	1.793	0.061	0.002	0.000
Anchoring	2.160	0.054	0.000	0.000
Conservatism	1.927	0.051	0.000	0.000
Over-optimism	2.461	0.061	0.000	0.000
Loss aversion	2.734	0.036	0.013	0.000

	Culture			
Behavioural Biases	**Constant**	**Beta**	**P-value**	**Sig.**
Representativeness	2.522	0.106	0.000	0.000
Confirmation	2.657	0.075	0.000	0.000
Self-attribution	2.204	0.105	0.000	0.000
Anchoring	2.160	0.059	0.012	0.000
Conservatism	1.927	0.052	0.022	0.000
Over-optimism	2.461	0.064	0.004	0.000
Availability/Salience/Cue competition	2.887	0.095	0.000	0.000
Framing	2.727	0.061	0.008	0.000
Illusion of knowledge	2.743	0.124	0.000	0.000

Illusion of control	3.007	0.109	0.000	0.002
Categorisation	2.453	0.110	0.000	0.000
Loss aversion	2.734	0.098	0.000	0.000

As Table 74 shows, the significance of the ANOVA analysis is 0.00<0.05. It means that ANOVA analysis is fit to explain the relationship between financial literacy and behavioural biases.

According to ANOVA analysis results, there are statistically positive and significant relationships between financial knowledge and representativeness (11.1%), confirmation (9.2%), hindsight (13.7%), anchoring (13.9%), conservatism (17.2%), over-optimism (8.1%), cognitive dissonance (15.9%), framing (16.2%), illusion of knowledge (10.1%), categorisation (13.0%), loss aversion (9.4%) and overconfidence (11.2%) because their p-values are lower than 5%. There is no statistically significant relationship between financial knowledge and self-attribution, cue competition and the illusion of control due to their p-values being higher than 5%. Framing bias (0.162) has the highest relationship with financial knowledge, while over-optimism bias (0.081) has the lowest relationship.

There is a negative and statistically significant relationship between financial attitude and hindsight (-13.4%), categorisation (-13.1%) and overconfidence (-10.2%) due to their p-values being less than 5%. The negative relationship between financial attitude and hindsight is 13.4%, which is the highest number, while the negative relationship between financial attitude and overconfidence is 10.2%, is the lowest number. There is no statistically significant relationship between financial attitude and the other behavioural biases.

There is a statistically significant relationship between financial behaviour and representativeness (-4.2%), confirmation (2.1%), hindsight (6.1%), anchoring (5.4%), conservatism (5.1%), over-optimism (6.1%) and loss aversion (3.6%) due to their p-values being less than 5%. There is a negative relationship between financial behaviour and representativeness (-0.042). There is a 6.1% positive relationship between hindsight and over-optimism.

There is no statistically significant relationship between culture and hindsight, cognitive dissonance and overconfidence due to their p-values being greater than 5%. There is a positive and statistically significant relationship between culture and the other biases. There is a 12.4% positive relationship, which is the highest correlation, between culture and illusion of knowledge, while there is a 5.2% positive relationship, which is the lowest correlation, between culture and conservatism.

As a summary, financial knowledge and culture significantly affect 12 out of 15 different behavioural biases. On the other hand, financial attitude only affects hindsight, categorisation and overconfidence biases. 7 out of 15 behavioural biases are affected by financial behaviour in general.

5.7.2. Bristol, UK

In this section, the results of the ANAVO analysis will be discussed for the participants in Bristol. Table 75 indicates the descriptive statistic of participants in Bristol.

Table 75: Descriptive Statistics of Bristol, UK

	N	Minimum	Maximum	Mean	Std. Deviation
Financial knowledge	203	1.00	8.00	6.8424	1.44015
Financial attitude	203	1.00	5.00	2.1724	0.97738
Financial behaviour	203	2.00	19.00	10.0493	3.39445
Culture	203	1.00	9.00	5.7635	1.72152
Representativeness	203	1.00	5.00	3.5320	0.88032
Confirmation	203	1.00	5.00	3.9901	0.65620
Hindsight	203	1.00	5.00	3.3399	1.13353
Self-attribution	203	1.00	5.00	3.2660	0.96250
Anchoring	203	1.00	5.00	4.0000	0.95958
Conservatism	203	1.00	5.00	3.9212	0.93539
Over-optimism	203	0.00	5.00	4.0148	0.84711
Availability/Salience/Cue competition	203	1.00	5.00	3.8325	0.81994
Cognitive dissonance	203	0.00	5.00	3.4236	1.50834
Framing	202	1.00	5.00	4.2426	0.97637
Illusion of knowledge	203	1.00	5.00	3.7783	0.96863
Illusion of control	203	0.00	5.00	3.9557	1.09137
Categorisation	203	0.00	5.00	3.9655	1.13617
Loss aversion	203	1.00	5.00	4.2167	0.96077
Overconfidence	203	1.00	5.00	3.6897	1.01827
Valid N (listwise)	202				

According to Table 75, 203 participants in Bristol completed the survey. The financial knowledge score is between 1 and 8, with the average financial knowledge score being 6.84. The financial attitude score is between 1 and 5, with the average score being 2.17. The financial behaviour score is between 2 and 19, with the average financial behaviour score being 10.05. The culture score is between 1 and 9, with the

average score being 5.76. Most of the behavioural biases scores are between 1 and 5. Some of the behavioural biases scores are 0 because they were not answered by the participants in Bristol.

Table 76 shows the results of the ANOVA analysis for participants in Bristol.

Table 76: ANOVA Analysis Results for Bristol, UK Participants

		Financial Knowledge		
Behavioural Biases	**Constant**	**Beta**	**P-value**	**Sig.**
Representativeness	2.325	0.147	0.003	0.016
Confirmation	2.584	0.122	0.001	0.000
Hindsight	1.638	0.139	0.018	0.000
Anchoring	1.925	0.150	0.002	0.000
Conservatism	1.429	0.203	0.000	0.000
Over-optimism	1.980	0.108	0.016	0.000
Cognitive dissonance	2.185	0.202	0.015	0.002
Framing	2.598	0.174	0.001	0.000
Loss aversion	2.094	0.143	0.005	0.000
		Financial Attitude		
Behavioural Biases	**Constant**	**Beta**	**P-value**	**Sig.**
Categorisation	2.087	-0.192	0.016	0.000
		Financial Behaviour		
Behavioural Biases	**Constant**	**Beta**	**P-value**	**Sig.**

Hindsight	1.638	0.087	0.001	0.000
Anchoring	1.925	0.078	0.000	0.000
Conservatism	1.429	0.079	0.000	0.000
Over-optimism	1.980	0.055	0.004	0.000
Categorisation	2.087	0.056	0.022	0.000

Culture

Behavioural Biases	**Constant**	**Beta**	**P-value**	**Sig.**
Confirmation	2.584	0.052	0.042	0.000
Self-attribution	2.257	0.089	0.023	0.006
Over-optimism	1.980	0.089	0.007	0.000
Availability/Salience/Cue competition	2.687	0.067	0.043	0.005
Illusion of knowledge	2.404	0.136	0.001	0.000
Illusion of control	2.934	0.142	0.002	0.004
Categorisation	2.087	0.170	0.000	0.000
Loss aversion	2.094	0.114	0.003	0.000

According to Table 76, the ANOVA analysis is good for explaining the relationship between financial literacy and behavioural biases in Bristol (sig. < 0.00)

There are positive and statistically significant relationships between financial knowledge and representativeness (14.7%), confirmation (12.2%), hindsight (13.9%), anchoring (15.0%), conservatism (20.3%), over-optimism (10.8%), cognitive dissonance (20.2%), framing (17.4%) and loss aversion (14.3%) due to their p-values being less than 5%. 20.3% is the highest positive relationship, between financial knowledge and conservatism, while 10.8% is the lowest positive relationship, between financial knowledge and over-optimism.

There is a negative and statistically significant relationship between financial attitude and categorisation (-0.192). There is not a statistically significant relationship between financial attitude and the other behavioural biases due to their p-values being greater than 5%.

There is a positive and statistically significant relationship between financial behaviour and hindsight (8.7%), anchoring (7.8%), conservatism (7.9%), over-optimism (5.5%) and categorisation (5.6%) (P-values < 0.05). There is not a statistically significant relationship between financial behaviour and the other behavioural biases. 8.7% is the highest positive relationship between financial behaviour and hindsight, while 5.5% is the lowest positive relationship between financial behaviour and over-optimism.

There is a positive and statistically significant relationship between culture and confirmation (5.2%), self-attribution (8.9%), over-optimism (8.9%), cue competition (6.7%), illusion of knowledge (13.6%), illusion of control (14.2%), categorisation (17.0%) and loss aversion (11.4%) (P-values<0.00). 17.0% is the highest positive relationship, between culture and categorisation, while 5.2% is the lowest positive relationship between financial knowledge and confirmation.

As a summary, financial knowledge significantly affects 9 out of 15 different behavioural biases while culture influences 8 out of 15 behavioural biases. On the other hand, financial attitude only affects categorisation bias. 5 out of 15 behavioural biases are affected by financial behaviour in Bristol.

5.7.3. Istanbul

In this section, the results of the ANAVO analysis will be discussed for the participants in Istanbul. Table 77 illustrates the descriptive statistics for participants in Istanbul.

Table 77: Descriptive Statistics for Istanbul

	N	Minimum	Maximum	Mean	Std. Deviation
Financial knowledge	198	2.00	8.00	7.2222	1.15372
Financial attitude	198	1.00	5.00	2.1212	0.95877
Financial behaviour	198	3.00	17.00	9.9848	2.99827
Culture	198	1.00	9.00	5.8333	1.68225
Representativeness	198	2.00	5.00	3.7374	0.82580
Confirmation	198	2.00	5.00	4.0934	0.61505
Hindsight	198	0.00	5.00	3.4848	1.17817
Self-attribution	198	1.00	5.00	3.2424	0.91896
Anchoring	198	1.00	5.00	4.1010	0.71240
Conservatism	198	2.00	5.00	4.1768	0.70103
Over-optimism	198	2.00	5.00	4.1919	0.69336
Availability/Salience/Cue competition	198	2.00	5.00	3.9419	0.66295
Cognitive dissonance	198	1.00	5.00	3.7626	1.32497
Framing	198	2.00	5.00	4.5025	0.59502
Illusion of knowledge	198	1.00	5.00	4.0253	0.88666
Illusion of control	198	1.00	5.00	4.1263	0.97127
Categorisation	198	0.00	5.00	4.1515	0.92746
Loss aversion	198	1.00	5.00	4.4040	0.72545
Overconfidence	198	1.00	5.00	3.9672	0.87705
Valid N (listwise)	198				

According to Table 77, 198 participants in Istanbul responded to the survey. The financial knowledge score is between 2 and 8, with the average financial knowledge score being 7.22. The financial attitude score is between 1 and 5, with the average score being 2.12. The financial behaviour score is between 3 and 17, with the average

financial behaviour score being 9.98. The culture score is between 1 and 9, with the average score being 5.83. Most of the behavioural biases scores are between 1 and 5. Some of the behavioural biases scores are 0 because they were not answered by the participants in Istanbul.

Table 78 shows the result of ANOVA analysis of participants in Istanbul.

Table 78: ANOVA Analysis Results for Istanbul

		Financial Knowledge		
Behavioural Biases	**Constant**	**Beta**	**P-value**	**Sig.**
Anchoring	2.713	0.100	0.044	0.012
Framing	3.279	0.102	0.009	0.000
		Financial Behaviour		
Behavioural Biases	**Constant**	**Beta**	**P-value**	**Sig.**
Representativeness	3.056	-0.061	0.005	0.000
Over-optimism	3.291	0.071	0.000	0.000
Framing	3.279	0.036	0.018	0.000
Loss aversion	3.824	0.039	0.047	0.002
		Culture		
Behavioural Biases	**Constant**	**Beta**	**P-value**	**Sig.**
Representativeness	3.056	0.163	0.000	0.000
Confirmation	2.902	0.102	0.000	0.000
Self-attribution	2.100	0.128	0.001	0.021
Availability/Salience/Cue competition	3.315	0.123	0.000	0.000
The Illusion of knowledge	3.506	0.104	0.007	0.010
Loss aversion	3.824	0.072	0.020	0.002

According to Table 78, the ANOVA analysis is good for explaining the relationship between financial literacy and behavioural biases in Istanbul (sig. < 0.00).

There is a positive and statistically significant relationship between financial knowledge and anchoring and framing because their p-values are less than 5%. There is not a statistically significant relationship between financial knowledge and the other behavioural biases due to their p-values being greater than 5%. There is a 10.2% positive relationship between financial knowledge and framing, and there is a 10.0% positive relationship between financial knowledge and anchoring.

There is not a statistically significant relationship between financial attitude and the behavioural biases due to their p-values being greater than 5%.

There is a negative and statistically significant relationship between financial attitude and representativeness (-0.061). There is a positive and statistically significant relationship between financial behaviour and over-optimism (7.1%), framing (3.6%) and loss aversion (3.9%) (P-values < 0.05). There is not a statistically significant relationship between financial knowledge and the other behavioural biases due to their p-values being greater than 5%.

There is a positive and statistically significant relationship between culture and representativeness, confirmation, self-attribution, cue competition, the illusion of knowledge and loss aversion (P-values < 0.00). 16.3% is the highest positive relationship between culture and representativeness, while 7.2% is the lowest positive relationship between financial knowledge and loss aversion.

As a summary, behavioural biases of young adults are only affected by financial knowledge, financial behaviour and culture in Istanbul. Culture affects 6 out of 15

behavioural biases, financial behaviour influences 4 out of 15 behavioural biases and financial knowledge only affects anchoring and framing behavioural biases in Istanbul.

5.7.4. Summary of the Results

There are statistically significant relationships between financial literacy and some of the behavioural biases. In this section, the relationships between the financial literacy components and behavioural biases were discussed.

Representativeness Bias:

There is no significant relationship between representativeness bias and financial knowledge in Istanbul, but there is a positive and significant relationship between representativeness bias and financial knowledge in Bristol. This means that the representativeness bias of participants in Istanbul is not affected by financial knowledge. However, participants in Bristol tend to believe that they are able to estimate the possibility of an event by comparing similar events when their financial knowledge increases.

Participants' representativeness bias is not affected by financial attitude, financial behaviour and culture in Bristol. Participants in Istanbul do not believe that they can estimate the results of events by comparing similar events if their financial behaviour score increases. Additionally, the culture score positively affects representativeness bias in Istanbul.

Confirmation Bias:

There is no significant relationship between confirmation bias and financial attitude or financial behaviour in either city. Also, confirmation bias is only affected by financial

knowledge in Bristol. Participants in Bristol tend to confirm the new knowledge that supports their previously existing beliefs or hypotheses when their financial knowledge increases. Culture also has a significant impact on confirmation bias in both cities.

Self-Attribution Bias:

Self-attribution bias is defined as individuals tending to believe that their success comes from their personal skills, and uncontrolled factors cause failure. There is no significant relationship between self-attribution bias and financial knowledge, financial behaviour or financial attitude in either city. The only culture affects the self-attribution bias.

Hindsight Bias:

There is no significant relationship between hindsight and financial knowledge, financial behaviour, financial attitude or culture in Istanbul. However, there is a significant relationship between hindsight bias and financial knowledge and financial behaviour in Bristol. If participants in Bristol estimate the outcome of an event incorrectly, they claim that they knew it was going to go the opposite way. This situation is called hindsight bias.

Anchoring Bias:

There is a significant relationship between financial knowledge and anchoring bias in both cities. Participants in Bristol and Istanbul rely too much on their pre-existing knowledge when their financial knowledge increases. For instance, if participants see a watch that costs £1500, and then they see a second watch that costs £200, they tend to see the second watch as being cheap. Whereas, if the second option were seen first, it probably would not have been viewed as being cheap. Additionally,

financial behaviour also affects the anchoring bias in Bristol, as well as financial knowledge.

There is no significant relationship between anchoring bias and financial attitude and culture in either city.

Conservatism Bias:

There is no significant relationship between conservatism bias and financial knowledge, financial attitude, financial behaviour and culture in Istanbul. Also, financial attitude and culture do not affect conservatism bias in Bristol. However, financial knowledge and financial behaviour do affect conservatism bias in Bristol. When the financial knowledge or financial behaviour scores increase in Bristol, participants might cling to their existing information and behave inflexibly when presented with new information.

Over-Optimism Bias:

There is a significant relationship between over-optimism bias and financial behaviour in Istanbul while financial knowledge, financial behaviour and culture affect the over-optimism bias in Bristol. When financial behaviour scores in Istanbul and financial knowledge, financial behaviour and culture scores in Bristol increase, participants tend to underestimate the probability of negative events and overestimate the probability of positive events. For example, they may underestimate the risk of having a car accident, and overestimate their future success in their career.

Cue Competition Bias:

There is a significant relationship between cue competition bias and culture in both cities. The other variables do not affect the cue competition bias in Bristol or Istanbul. For instance, investing, which is based on intuition, is influenced by culture in both cities.

Cognitive Dissonance Bias:

There is no significant relationship between cognitive dissonance bias and financial knowledge, financial attitude, financial behaviour or culture in Istanbul. However, there is a significant relationship between cognitive dissonance bias and financial knowledge in Bristol. Participants' behaviour in Bristol conflicts with their attitudes or beliefs when financial knowledge increases.

Framing Bias:

Financial knowledge affects the framing bias in both cities. Also, there is a significant relationship between framing bias and financial behaviour in Istanbul. When participants' financial knowledge increases in both cities, or the financial behaviour score increases in Istanbul, presenting the same events in two different ways might lead to different decisions or judgements for participants.

The Illusion of Knowledge Bias:

There is a significant relationship between the illusion of knowledge bias and culture in both cities. The other variables do not affect the illusion of knowledge bias in Bristol or Istanbul. Participants in Bristol and Istanbul tend to believe that the accuracy of probability can be increased with more knowledge under the effect of culture.

The Illusion of Control Bias:

There is no significant relationship between cognitive dissonance bias and financial knowledge, financial attitude, financial behaviour or culture in Istanbul. However, there is a significant relationship between the illusion of control bias and culture in Bristol. Participants in Bristol tend to believe that they can control the result of an event even if they cannot control the event due to the effect of culture.

Categorisation Bias:

There is no significant relationship between categorisation bias and financial knowledge, financial attitude, financial behaviour or culture in Istanbul. However, there is a significant relationship between categorisation bias and financial attitude, financial behaviour and culture in Bristol. Participants in Bristol tend to classify events differently when financial behaviour and culture scores increase and financial attitude scores decrease. For example, financial assets can be classified as risky assets and risk-free assets.

Loss Aversion Bias:

There is a significant relationship between loss aversion bias and culture in both cities. Financial knowledge affects loss aversion in Bristol, while financial behaviour affects loss aversion in Istanbul. When a participant's financial knowledge score increases in Bristol and a participant's financial behaviour score increases in Istanbul, they tend to avoid loss.

5.8. Summary

In this chapter, firstly, financial literacy score and level were analysed. Secondly, young individuals' behaviour biases score and level were revealed. Thirdly, the relationship between financial literacy and behavioural biases were analysed via

ANOVA analysis. In the next chapter, critical discussion of financial literacy, behavioural biases and the relationship between these two are revealed. In addition to this, the research problem and questions are answered. Lastly, the research framework is updated based on findings.

Chapter Six: Discussion of Findings and Framework Completion

Overview

In the previous chapter, the gathered data was analysed. This chapter consists of a critical discussion of findings, the answer to the research problem and questions and framework re-development.

6.1. Financial Literacy and Re-Development of Framework

Financial literacy is defined as a mixture of understanding, skills, knowledge, attitude and behaviour required to make effective financial decisions and eventually reach individual financial wellbeing (OECD, 2011). In order to make good financial decisions, individuals should have a high level of financial literacy (Lusardi and Tufano, 2009; OECD, 2015; Mandell, 2016; Eker, 2017). Financial literacy consists of financial knowledge, financial behaviour and financial attitude (Atkinson and Messy, 2012; OECD, 2015; Erner, 2016; Chen and Lemieux, 2016). In addition to this, culture should be taken into account because financial literacy is influenced by it (Xu and Zia, 2012; Cameron et *al*., 2014; Potrich et al., 2015).

In this research, financial knowledge, financial behaviour and financial attitude were used as financial literacy components. Also, the culture variable was used to calculate financial literacy. The research question of “what are the most significant factors in relation to raising the financial literacy level of young adults?” (RQ3) was investigated.

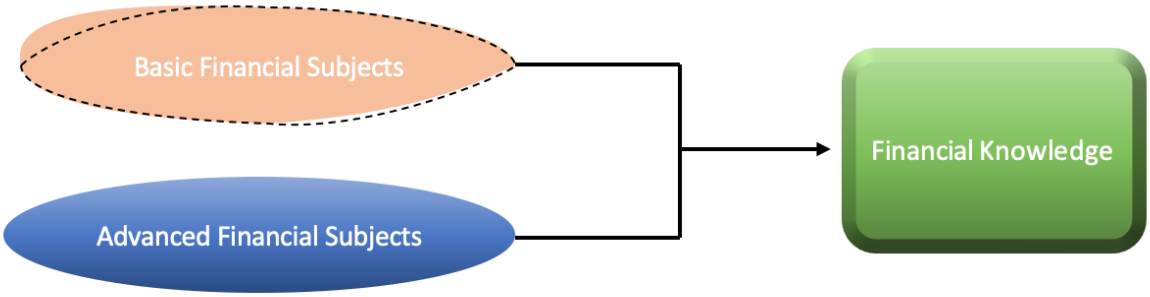
According to Lusardi (2008), financial knowledge consists of two components which are basic and advanced financial topics. Huston (2010) defined financial literacy as the ability of the individual to make effective financial decisions. The effectiveness of the financial decision depends on its accuracy of the decision. Decisions on financial

issues, in particular, require basic financial knowledge. Knowledge obtained from parents in the family, teachers at school and experiences in business significantly impacts on the individual's level of financial literacy. Accordingly, financially literate individuals must have knowledge of basic financial concepts.

Basic financial subjects such as risk and return, the definition of inflation and interest paid on loan are the best known topics among young adults in Bristol and Istanbul. Even if complex financial subjects are lesser know among them, complex financial topics were answered correctly by over 70% of the participants. In this point, it can be clearly said that young individuals in Bristol and Istanbul have a high level of financial knowledge.

Diversification that is advanced financial topic is lesser known subjects among young individuals in Bristol and Istanbul. It means that they have limited ability to manage risk and uncertainties. Complex financial subjects should be taught to them. Otherwise, young adults with less knowledge of diversification usually rely on the advice of their family and friends (Lusardi and Mitchell, 2014). At the same time, due to less knowledge about compound interest, higher returns are more likely to be missed in the future (OECD, 2015). They undoubtedly want to make retirement plans due to the high level of financial knowledge, but because of a lack of compound interest knowledge as a complex financial subject, returns are most likely underestimated. As a summary of financial knowledge, individuals' complex financial knowledge should be developed in Bristol and Istanbul.

Re-development of financial knowledge framework is shown in Figure 17, based on findings.



Note: Blue colour indicates the variable should be developed while orange colour represents young adults have sufficient knowledge about the topics.

Figure 17: The Re-development of Financial Knowledge Framework

According to Figure 17, financial knowledge depends on basic and advanced financial knowledge in Bristol and Istanbul. The empirical results show that advanced financial subjects should be taught to young individuals in Bristol and Istanbul to increase their financial knowledge. In other words, more weight should be given to advanced financial topics.

Today, access to knowledge has become easy with the opportunities provided by new communication technologies. The important thing at this stage is to understand and interpret the provided knowledge. For this reason, the use of financial knowledge resources and the quality of financial behaviours arising from this using are important (Temizel and Bayram, 2011). Someone's attitudes and preferences play an important role in learning and putting into practice. Decisions such as saving, investing for the future and retirement planning are influenced by individual preferences. For example, it will be very unlikely that a person who does not have anxiety about the future and who does not intend to accumulate about the future will be involved in accumulation behaviour. Since behaviour patterns of individuals have a significant impact on their economic wellbeing, it is important to identify these behavior dimensions in

determining financial literacy levels. Behaviours of the individual such as extreme caution when shopping, paying bills on time, monitoring the personal financial situation, taking responsibility and budgeting affect individual financial literacy (Ergun, 2017).

The attributes, awareness, personality and psychological variables of individuals significantly influence their financial behaviour (Bergner, 2011; Garcia, 2013). There is a positive relationship between financial behaviour and financial literacy (Atkinson and Messy, 2012). In general, in the last twelve months, young adults in Bristol and Istanbul have successfully saved money. This result revealed that they are aware of the significance of investing, but because the consequences of financial knowledge suggest that the higher return could not be measured. At the same time, young adults in Bristol and Istanbul, if they have to spend more than their income, are able to use their savings.

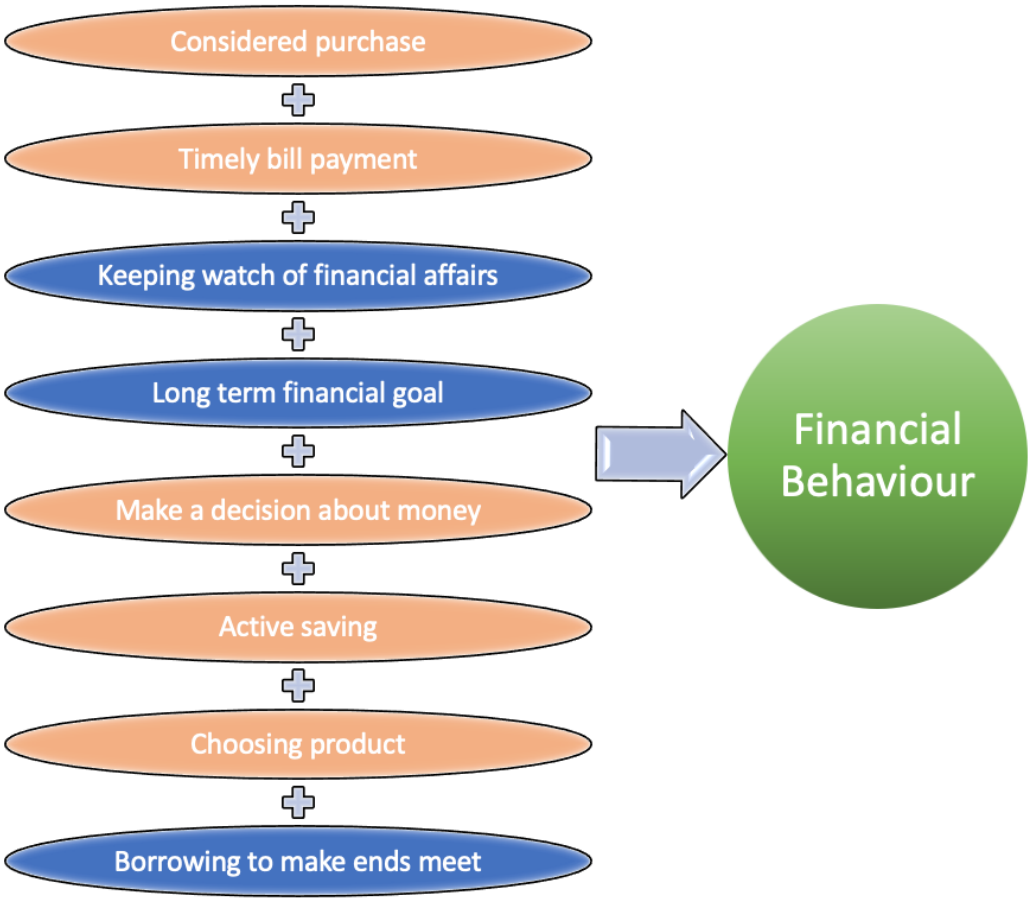
On the other hand, without asking family or friends to help, most young adults are unable to afford their unexpected expenses. This illustrates that they are unable to select an appropriate investment instrument due to a lack of existing financial knowledge and are willing to accept lower returns (Sarigul, 2014). The lack of a long-term financial plan may be another factor. In Bristol and Istanbul, most young adults do not have long-term financial plans. This shows that they do not know exactly how and where financial goods and services can be purchased and that it is not possible to use financial instruments effectively (Hayta, 2011). In creating and managing money, young adults are thus insufficient.

While the financial habits of young people are starting to be influenced in the family, their peers are also greatly affected (Kretschmer and Pike, 2010; Masche, 2010;

Lusardi and Mitchell, 2014). Whether individuals exhibit good financial behaviour or not depending on their financial knowledge level (OECD, 2015). The importance of making a budget, setting of a long-term financial plan and keeping watch of financial affairs should be taught to them. The individuals' financial behaviour may not be changed without having knowledge about these subjects. Therefore, the financial knowledge component is more important than financial behaviour component to increase financial well-being. This result is supported by Hilgert (2003) and Atkinson and Messy (2012). The critical point is, unless young individuals exhibit good financial behaviour, only having a high level of financial knowledge may not help them to increase their financial well-being. In other words, it would not help them unless they practically use their financial knowledge.

Young adults in Bristol and Istanbul have risky behaviour that is slightly above average. Generally, young adults intend to make more risky financial decisions due to lack of knowledge about diversification. This result is supported by Lusardi (2013). Young adults in Bristol and Istanbul prefer to postpone their spending in the event of financial distress or to be able to buy more in the future. To be able to buy more tomorrow, they need to know how their health can be strengthened. Effective financial instruments and saving strategies should be known for this (Temizel and Bayram, 2011).

Based on the above discussion, financial behaviour framework can be re-developed as Figure 18.

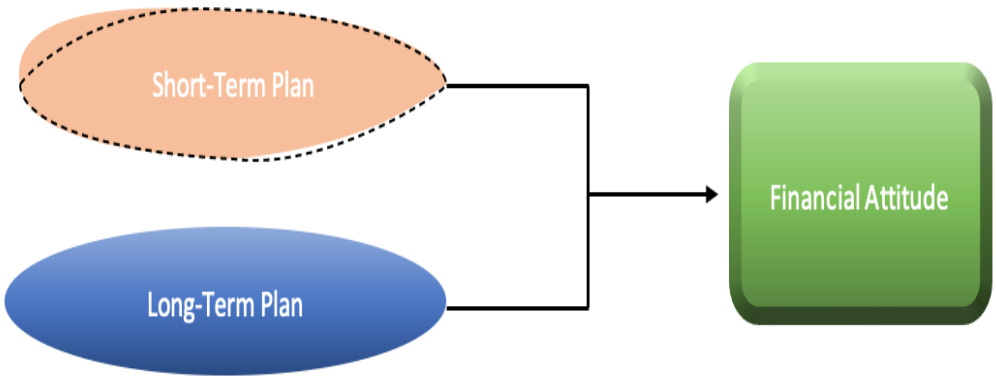


Note: Blue colour indicates the variable should be developed while orange colour represents young adults have sufficient knowledge about the topics.

Figure 18: The Re-development of Financial Behaviour Framework

In Figure 18, the blue highlighted components should be given more weights because young individuals have the lowest financial behaviour score in the blue components. They do not know what to pay attention to and how to prepare budgets while making their budgets. The balance between spending and saving should, therefore, not be achieved. Young adults borrow more due to a lack of budget planning habits (Lusardi, 2013). As a result, it is predicted that the borrowing level of young adults may rise in the future unless financial education is given to underline the importance of budget planning. Young individuals in Bristol and Istanbul should be educated about keeping watch of financial affairs, long-term financial goal and borrowing to make ends meet.

Figure 19 shows the re-development of financial attitude framework.

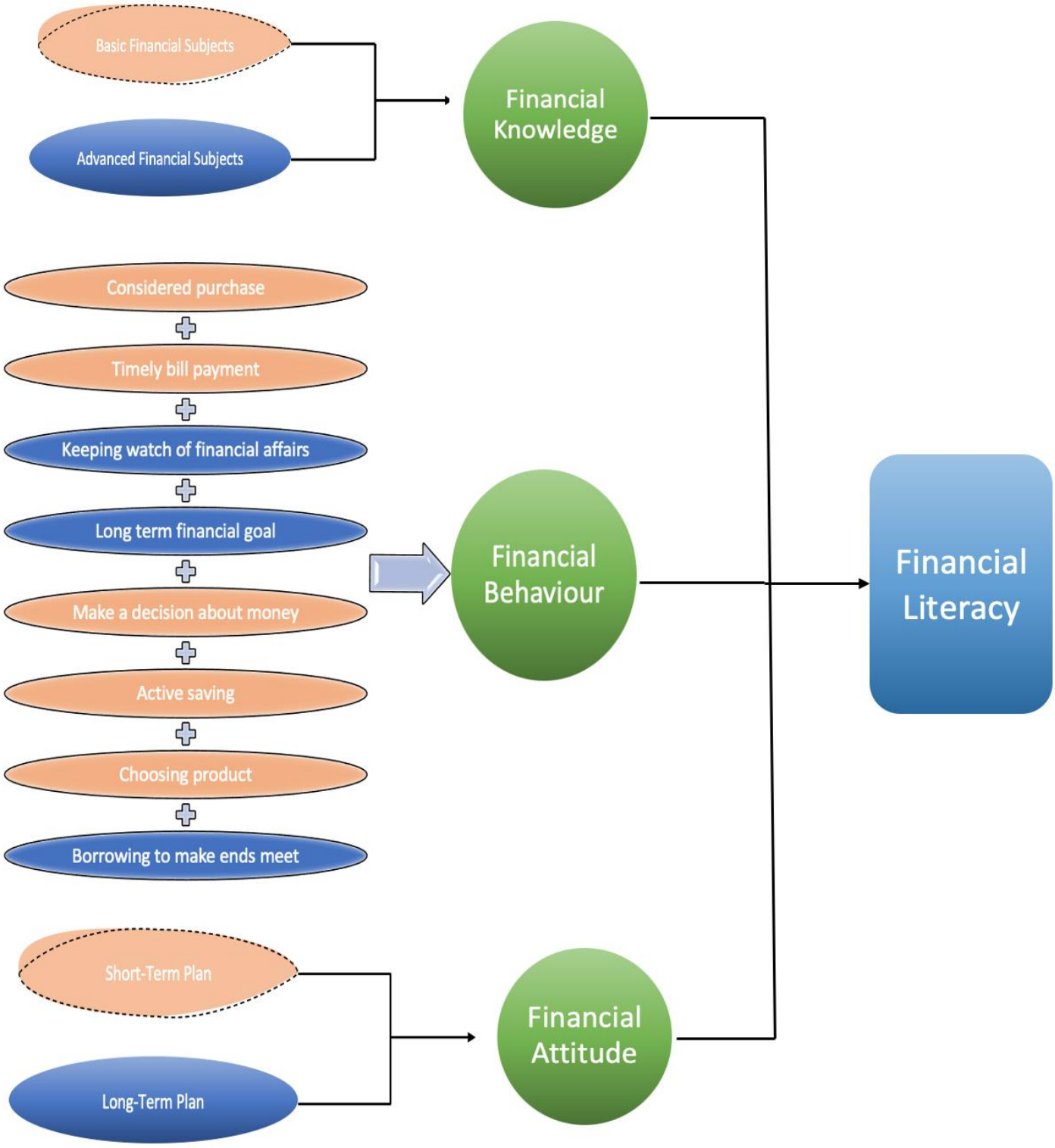


Note: Blue colour indicates the variable should be developed while orange colour represents young adults have sufficient knowledge about the topics.

Figure 19: The Re-development of Financial Attitude

Financial attitude is defined as individuals' perception of financial matters. It is the opportunity to plan ahead and hold an effective savings account (OECD, 2015). It measures whether young individuals focus on long-term or not. Generally, young adults focus on short-term instead of long-term. The reason for this may be related to economic uncertainties or their knowledge about retirement (Eker, 2017). The importance of a long-term financial plan should be taught to young individuals. The focus should be on developing a long-term financial plan among the young individuals in Bristol and Istanbul in order to enhance financial literacy among them.

Figure 20 indicates the re-development of financial literacy framework.



Note: Blue colour indicates the variable should be developed while orange colour represents young adults have sufficient knowledge about the topics.

Figure 20: The Re-development of Financial Literacy Framework

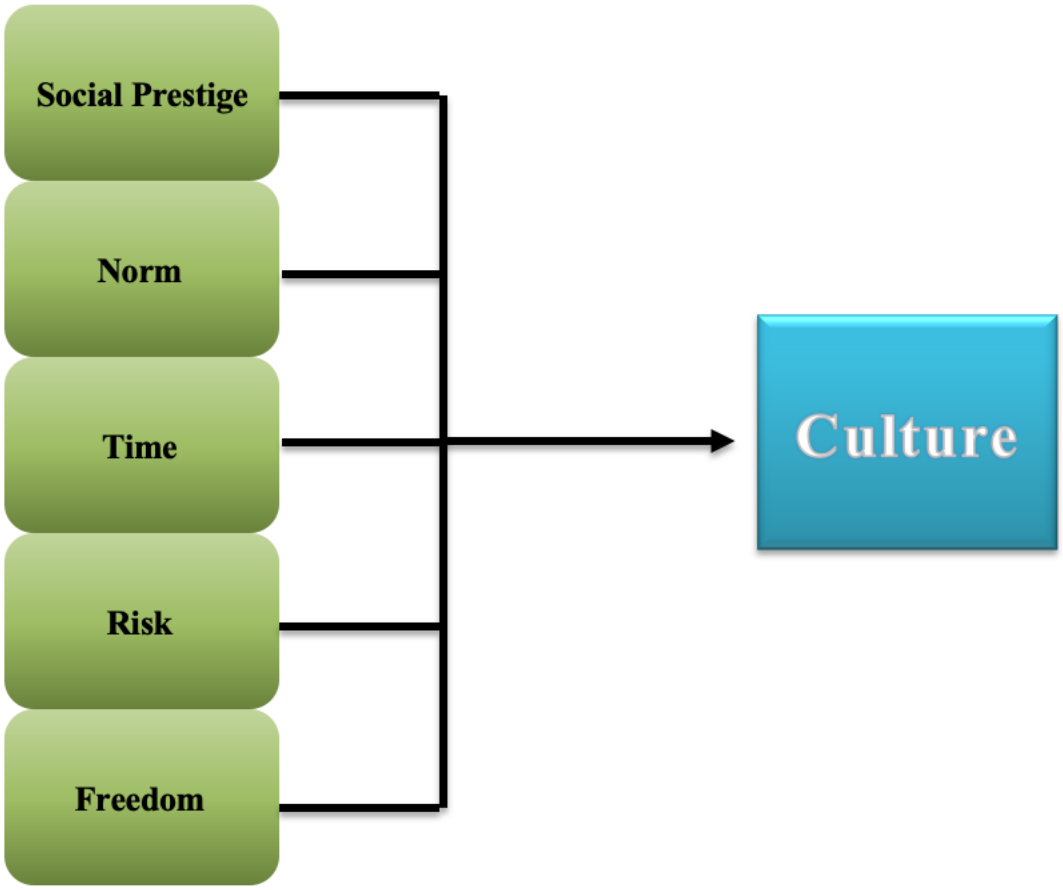
Based on the above discussion, the re-development of financial literacy is shown in Figure 20. Financial knowledge, financial behaviour and financial attitude consist of the financial literacy level of individuals. The most important component is financial knowledge to increase financial literacy level (Hilgert, 2003). On the other hand, it would not be enough only focusing on the level of financial knowledge to increase the financial literacy level of them. Financial behaviour and financial attitude have an important effect on it. These two components are the application of financial knowledge. Young adults should be educated about advanced financial knowledge. The importance of a long-term financial plan, making a budget and keeping watch of financial affairs should be taken into account to increase financial behaviour and financial attitude.

International Cooperation for Financial Education (INFE), established under OECD, in 2011, financial literacy; in order to achieve strong financial decisions and individual financial wellbeing, it has been defined as a combination of knowledge, skill, attitude, and behaviour. The financial knowledge referred to here includes financial terms, concepts and skills at managing the individual or family budget at the most basic level (Temizel and Bayram, 2010).

Risk perception, spending habit, norms, freedom and social prestige as culture components affect the financial decisions of individuals. The culture is a set of norms, beliefs and preferences shared among members of social groups (Guisoet et *al*., 2006). Culture may affect financial literacy through systematic variation in time or risk preferences (Falk et *al*., 2018). In this quantitative research, these factors have been taken into account to determine the financial literacy level of young individuals. In general, more young adults in Istanbul seem to believe that they can gain social

prestige with money. At the same time, they think that if they have enough money, they can do whatever they want. Money is used as a mechanism for socialising young adults in Istanbul. This result is similar with Gokmen's (2012) study. In accordance with this, more young adults assume that individuals should not have debt or spend more than they have. In the event of financial difficulties, more young adults in Bristol can postpone their spending. At the same time, they exhibit more risky behaviour than Istanbul. It can be said that young adults in Istanbul would like to avoid borrowing; at the same time, young adults in Bristol are better at avoiding borrowing because they can easily postpone their spending. The borrowing amount of Bristol may therefore be lower in the future than that of Istanbul. In summary, culture significantly influences individuals financial knowledge, financial behaviour and financial attitude (Lusardi, 2010; OECD, 2015, Falk et *al*., 2018).

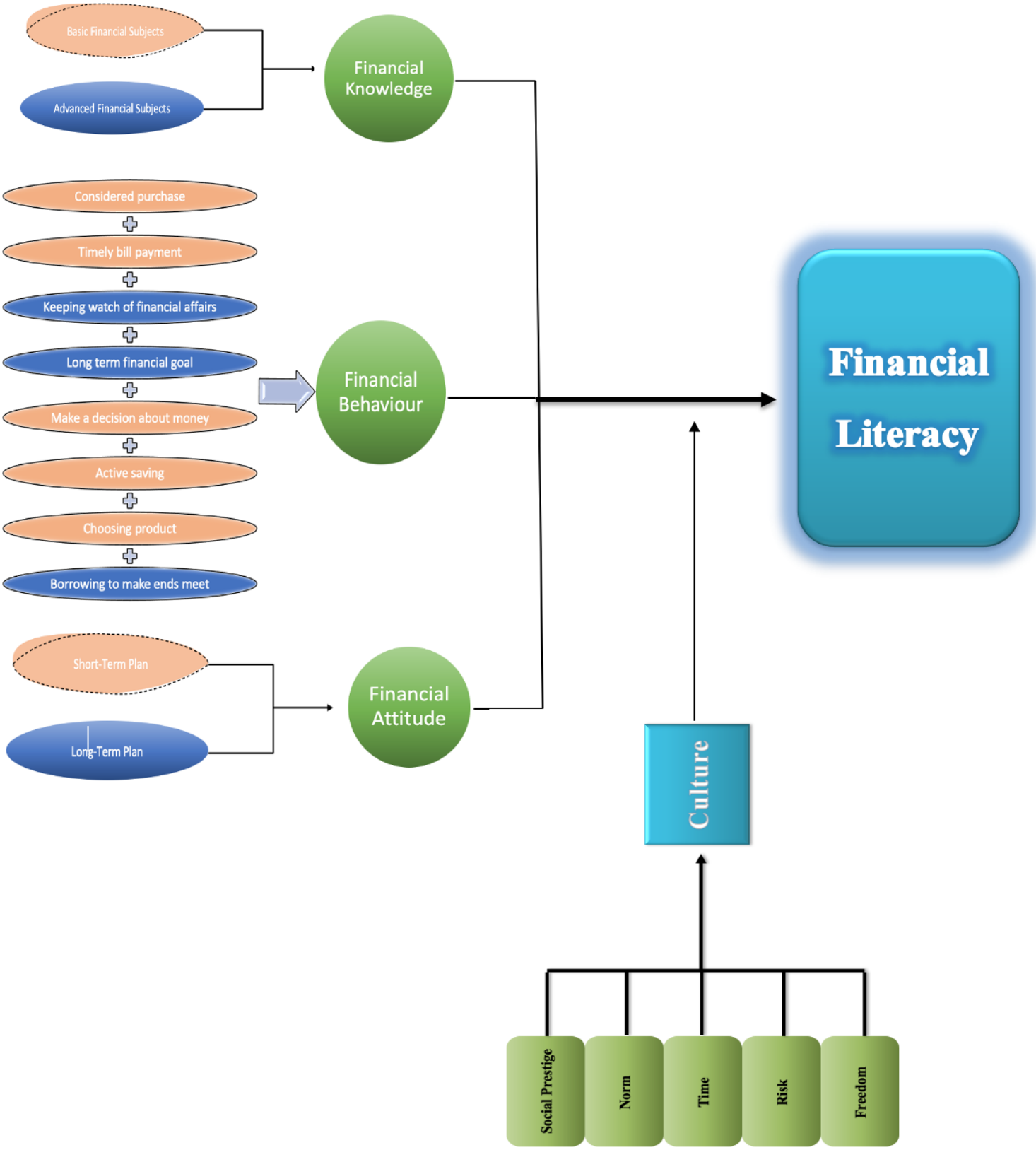
Figure 21 shows the re-development of culture framework based on the above discussion.



Note: Green colour indicates the accepted variables for culture.

Figure 21: The Re-development of Culture Framework

Social prestige, norms, time, risk preferences and freedom consists of culture. These components have an important role in individuals' financial behaviour and attitudes besides financial knowledge. Based on the above findings, financial literacy framework re-can be developed like in Figure 22.



Note: Blue colour indicates the variable should be developed while orange colour represents young adults have sufficient knowledge about the topics. Green colour indicates accepted variables.

Figure 22: The Re-development of Financial Literacy Framework

Generally, depending on culture, there are differences between financial literacy and gender. In Bristol, women have a higher level of financial literacy than men, while men have a higher level of financial literacy than women in Istanbul. This result is similar with GFLEC Report (2017). Based on culture, there are differences between financial literacy and the level of education. It can be seen that increasing the level of education for young adults in both Bristol and Istanbul usually raises their level of financial literacy (Mandell and Klein, 2009). Based on culture, there are differences between financial literacy and marital status. The level of financial literacy of single young adults in Bristol is low, whereas in Istanbul it is high. The financial behaviour of single young adults in Istanbul is expected to be better than that of Bristol (Lusardi and Mitchell, 2008). Generally, irrespective of background, students have low levels of financial literacy. Additionally, there is higher financial literacy among young adults who work for themselves. There were also not enough participants with £40,000 or above income, which is why their level of financial literacy is poor. Therefore, it can be seen that both societies have a positive relationship between the level of income and financial literacy (Gokmen, 2012).

Motivations that guide behaviours may differ depending on variables such as a person's age, occupation and educational background. The same motives and needs can create other forms of behaviour in individuals. For example, while someone can buying stocks to gain reputation, another person can sell his/her shares. Sometimes, different motives and needs can lead to the same behaviour in different people. One can buy the stock for security needs, that is, for earning money, while another can buy for the need to gain dignity in order to look successful and superior. In many developed capital markets, investors are tried to be trained through direct knowledge. Investors need to increase their financial literacy and be aware of the factors posed by

behavioral finance in order to make rational decisions. The investor's knowledge level helps them make investment decisions that are appropriate for their investment objectives and risk profile. The fact that investors have high financial knowledge and experience helps them to act rationally in their investment decisions and get more returns from other investors (Hayta, 2011).

6.2. Behavioural Biases and Re-Development of Framework

One of the essential competencies for making effective financial decisions is financial literacy. However, it is not the only factor that provides making good financial decisions to individuals. Behavioural biases that influence the financial decisions of individuals play an important role in this process. On the one hand, individuals can make good financial decisions by financial literacy; on the other, because of behavioural biases, individuals can make irrational financial decisions.

Anchoring, conservatism, categorisation and illusion of control are common behavioural biases among young adults in Bristol and Istanbul. When young adults in Bristol and Istanbul attempt to forecast a situation, they imagine a predetermined initial value in their minds. This value is called as their reference point. This value is their point of reference. Based on the first knowledge they have learned or gained, they tend to establish a reference point. They analyze the knowledge that comes out later and adjusts their estimates up or down. Regardless of how the starting points are picked, it is seen that their calculations are generally insufficient (Pompian, 2011). This condition contributes to both conservatism and anchoring bias occurring (Montier, 2007). While new knowledge is adopted by young adults in Bristol and Istanbul, they are more relying on their old views and expectations. For this reason, young adults indicate that they are unresponsive to new knowledge. This scenario leads to biassed

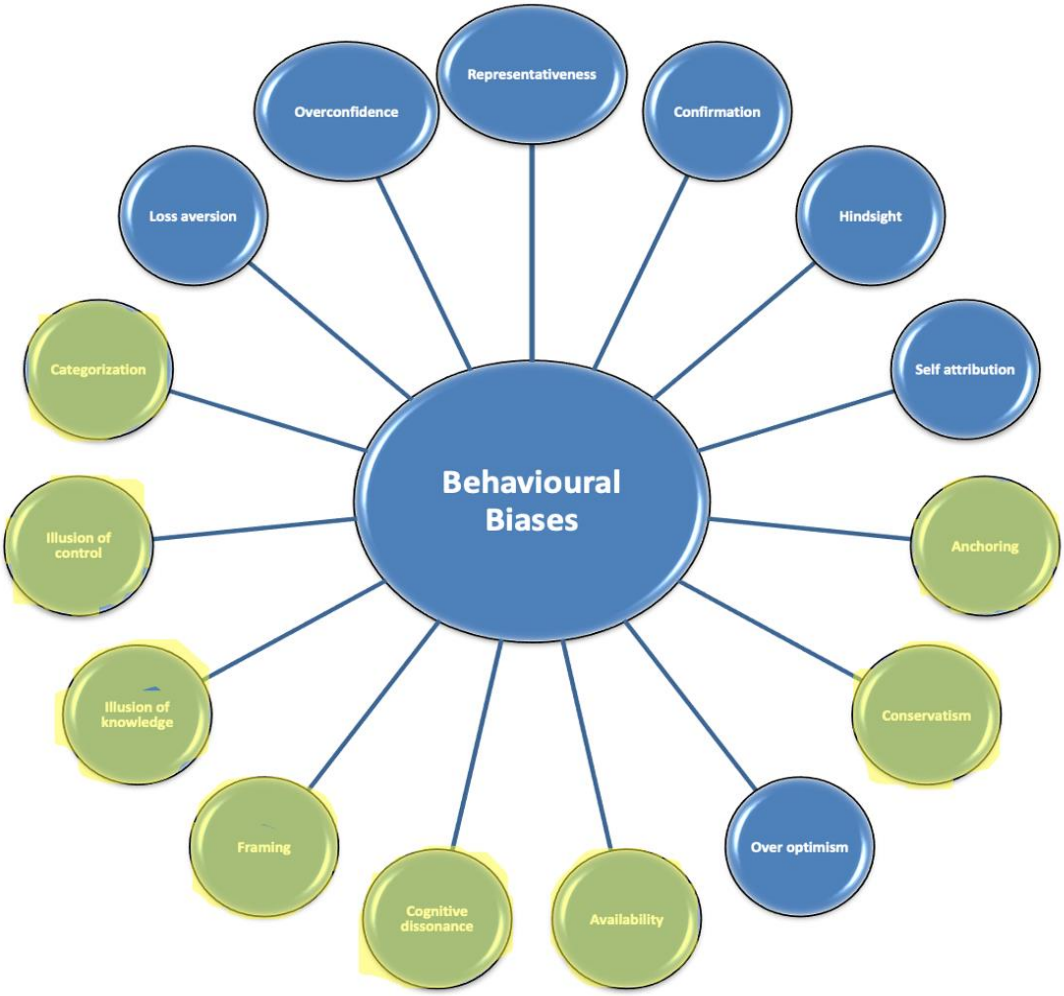
decision making (Barberis and Thaler, 2002). Furthermore, young adults prefer to divide concepts into general groups in Bristol and Istanbul and dismiss differences between members of the same group. This bais is very common among individuals (Shefrin, 2010). At the same time, in Bristol and Istanbul, young adults tend to believe that they can, or at least have an effect on, the outcomes of events, while they can not influence the outcomes of events. Young people, in other words, tend to believe that they have effects on the consequences of uncontrollable events (Pompian, 2011).

Anchoring, categorisation and conservatism are common behavioural biases among young adults in Bristol. In Bristol, most young adults may prefer to invest in businesses they work with or operate in the regional region in which they live since they are over-optimistic about their businesses and their geographical regions (Pompian, 2006). Biases are therefore included in the financial decisions they make. At the same time, in Bristol, young adults rely heavily on the first knowledge they obtain when making a decision, and in their subsequent decisions, they are influenced by this knowledge. For instance, when young adults want to buy a house in Bristol, the price provides a reference point for that house. They may be satisfied if they purchase this house under the reference point. However, the same type of houses could be found in the market much cheaper. As there is not enough market research, this decision includes the anchoring bias. This first knowledge gained by young adults in Bristol was their reference point. They may show an inadequate reaction to new knowledge. They stick to their old views and values more (Pompian, 2011). This shows that young adults have made the decisions in Bristol with a conservatism bias. At the same time, young adults in Bristol make their decisions by classifying financial decisions in accordance with their beliefs. Their investments tend to be categorised as good and poor.

Immediately after it begins losing value, a well-classified investment is not evaluated in the poor category (Barberis and Shleifer, 2003).

Framing, cognitive dissonance, the illusion of knowledge and availability are the most common behavioural biases among young adults in Istanbul. Depending on the circumstances in which the option is presented, young adults in Istanbul tend to react in various ways to different situations. They are more sensitive to losses than to gains. The condition portrayed in a frame illustrating the losses is therefore not attractive to them. When the advantage is illustrated, the same alternative becomes more attractive (Shefrin, 2010). In short, the presentation of situations influences the way in which young people in Istanbul perceive the outputs and facts. At the same time, in Istanbul, young adults feel uncomfortable when they realize that new knowledge contradicts previous information. Young adults in Istanbul may also amend their thoughts in order to explain their past actions. Istanbul's young adults assume that with more experience, the accuracy of their forecasts will improve. So they want more to know than anyone knows. In fact, however, regardless of the amount of information they have, individuals make the same decision. The sense of confidence of individuals is enhanced by any acquired understanding (Montier, 2007). When making decisions, young adults in Istanbul recognise the more obvious hints and ignore less obvious ones. In other terms, not the right one has been selected, but the more obvious one, among the several variables that could be linked to the decision. At the same time, Istanbul's young adults can opt to invest on the basis of their emotions rather than the right ones (Oran, 2008).

Based on the above discussions, re-development of behavioural biases framework can be designed like Figure 23.



Note: Green colours lesseer behavioural biases among young adults while blue colours represents common behavioural biases among them.

Figure 23: Re-Development of Behavioural Biases Framework

Figure 23 represents the most common biases that are highlighted with yellow among young individuals in Bristol and Istanbul. Culture influences the level of behavioural biases of young adults considerably. Depending on their culture, young adults have multiple behavioural biases. As the most common behavioural biases are, young adults in Bristol should be advised about anchoring, categorization and conservatism. As the most common behavioural biases are, young adults in Istanbul should be notified about framing, cognitive dissonance, the illusion of knowledge and availability biases.

6.3. Behavioural Biases and Financial Literacy and Re-Development of Framework

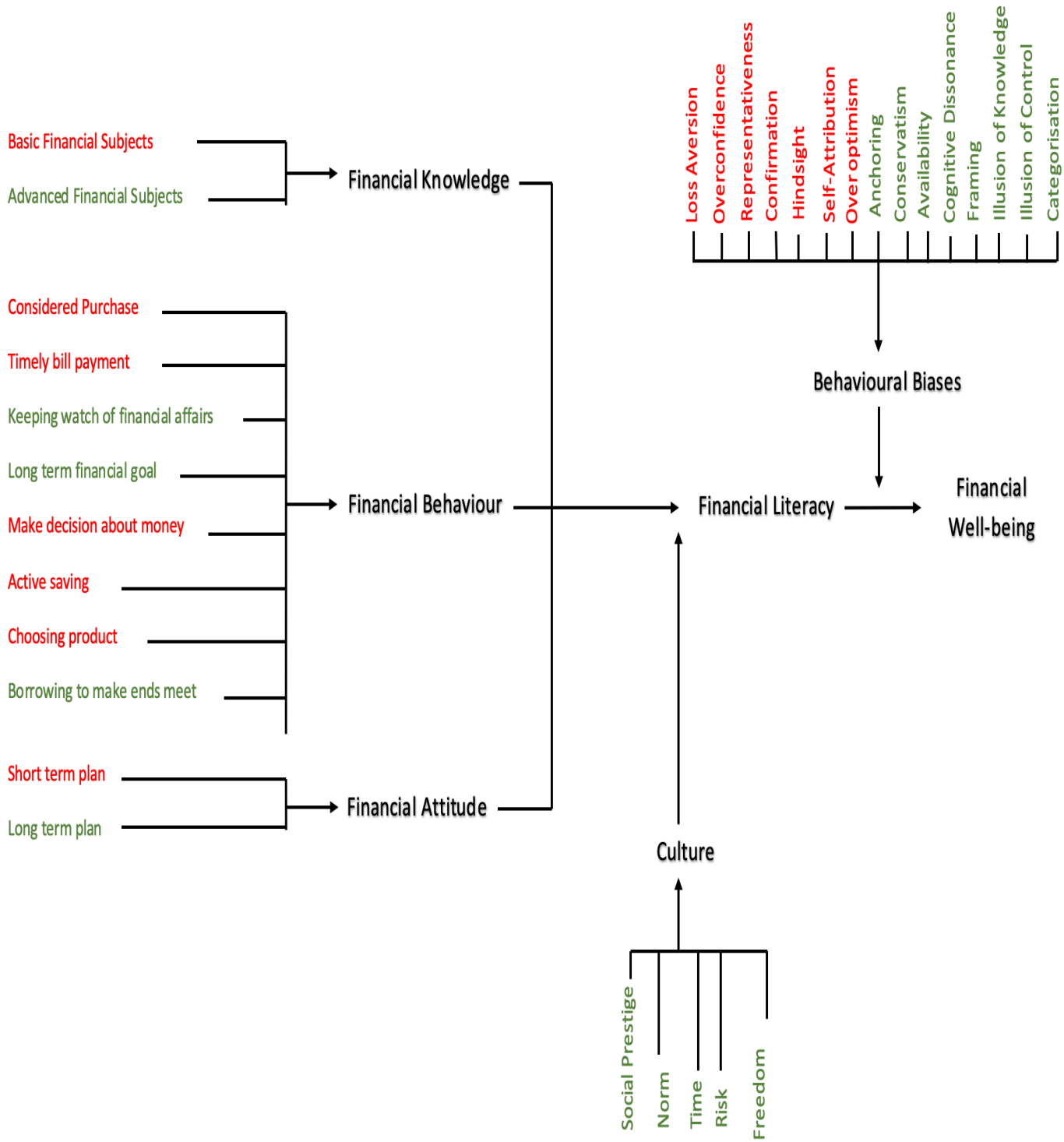
Financial literacy has played an important role in making effective financial decisions. At the same time, young individuals' financial decisions are influenced by their behavioural biases (Garcia, 2013). 15 behavioural biases were examined to investigate the relationship between financial literacy and behavioural biases. Firstly, the relationship between these two was investigated combining the data in Bristol and Istanbul to find out a general solution. Secondly, the relationship between these two factors was analysed for Bristol. Thirdly, the same analysis was done for Istanbul. Thus, cultural differences in the relationship have been revealed.

Financial Knowledge and Behavioural Bias: There are statistically significant and positive relationship between financial knowledge and behavioural biases excluding self attribution, illusion of control and availability biases. It means that financial knowledge does not effect self attribution, illusion of control and availability biases. Also, financial knowledge does not help to reduce behavioural biases level of young individuals as there are positive relationship between them. On the other hand, financial knowledge is the most important components that provides to make effective financial decisions. In this point, awereness of the having behavioural biases should be raised to avoid irrational financial decisions. This result is similar with Sezer and Demir's (2015) and Kilinc and Kilic's (2018) studies. In Bristol, there are statistically significant and positive relationship between financial knowledge and 9 out of 15 behavioural biases. In Istanbul, there are statistically significant and positive relationship between financial knowledge and anchoring and framing biases. The financial knowledge does not effect majority of the behavioural biases in Istanbul.

Financial Behaviour and Behavioural Biases: There are statistically relationship between financial behaviour and only 7 out of 15 behavioural biases. Only the level of representativeness bias can be reduced by exhibiting good financial behaviour. 6 behavioural biases out of 15 can not be reduced by exhibiting good financial behaviour due to positive relationship between them. The individuals should be informed about having behavioural biases to prevent from irrational financial decisions. In Bristol, there are statistically significance and positive relationship between financial behaviour and only 5 out of 15 behavioural biases. In Istanbul, there are statistically significance and negative relationship between representativeness bias and financial behaviour. Good financial behaviour helps to reduce the level of representativeness bias. On the other hand, there are statistically significant relationship between financial behaviour and framing, over-optimism and loss aversion.

Financial Attitude and Behavioural Biases: Young adults behavioural biases which are hindsight, categorizsation and overconfidence can be reduced by good financial attitude because there is a negative relationship between them. In Bristol, there is statistically significant and negative relationship between financial attitude and categorisation bias. Having good financial attitude helps to reduce the level of categorisation bias. In Istanbul, there is no statistically significant relationship between financial attitude and behavioural biases.

Based on above discussion, re-development of the this research framework can be designed like Figure 24.



Note: Green variables should be developed. Red colours show young adults enough knowledge about them.

Figure 24: Re-development of the Research Framework

In Figure 24, more weight should be given to blue components of financial knowledge, financial behaviour and financial attitude in Bristol and Istanbul in order to increase

financial literacy level of young individuals. Culture affects financial literacy level of young individuals. Young individuals' financial well-being can be increased by high level of financial literacy but behavioural biases influence it negatively. Depending on culture, some of the behavioural biases can be reduced by financial literacy (exhibiting good financial behaviour and financial attitude).

6.4. Overall Conclusion

Young adults in Istanbul have more financial knowledge than young adults in Bristol. Complex financial subjects lesser-known among young adults in Bristol and Istanbul, while they have enough knowledge about basic financial subjects. Specifically, risk and return, interest paid on loan and definition of inflation are well-known subjects among young adults in Bristol and Istanbul. However, diversification and compound interest are lesser-known subjects among young adults in Bristol and Istanbul. Also, young adults in Bristol need to be educated about the time value of money, whereas young adults in Istanbul need to be educated about the calculation of interest plus principal. Financial education should be designed to cover complex financial subjects as young adults do not have sufficient financial knowledge about them (Alkaya and Yagli, 2015). At the same time, this shortcoming should be overcomed as soon as possible as because financial markets become more complicated every single day (Vijayvargy and Bahkshi, 2018). Most of the young adults in Bristol and Istanbul are aware of their shortcomings about complex financial subjects. This means that financial education should become a very effective way to raise their financial literacy if they are willing to overcome this shortcoming (Temizel and Bayram, 2011). Nevertheless, young adults in both cities are slightly over the average financial knowledge.

At the same time, there is a positive relationship between financial literacy and saving and investment and long term financial plan (Hayta, 2011). Although young adults in both cities are actively saving, their knowledge on how to get more returns is insufficient. As a result of this, they generally accept lower returns instead of optimum returns they can earn (Sarigul, 2014). In addition, they may take more risk in investments as they are insufficient in risk diversification (Luasrdi and Mitchell, 2008; Ergun, 2017) but they intend to exhibit more risky behaviour. When the subject of risk diversification is taught through visual tools, it becomes more effective on young adults. Therefore, complex issues in financial education should be taught by using visual tools (Lusardi *et al*., 2017).

Generally, young adults focus on short term financial plan rather than long term (Lusardi and Mitchell, 2014). The main reason for wealth inequality in retirement is the financial knowledge gap among individuals. Individuals with high financial knowledge make higher investment returns and make the necessary savings for their retirement periods (Lusardi *et al*., 2017). Acording to OECD (2015) reports, the financial literacy level of UK and Turkey is close to each other. The financial literacy level of UK was slightly under the average while financial literacy level of Turkey was slightly over the average. In this study, the financial literacy level of Bristol was slightly under the average while financial literacy level of Istanbul was slightly over the average.

One of the main reason for this result, young adults do not have sufficient knowledge about complex subjects. Consequently, their financial behaviour is affected by their financial knowledge (Lusardi, 2013). Young adults in Bristol and Istanbul exhibit good financial behaviour when they are faced with product choice. Young adults both in Bristol and Istanbul are actively saving. Bills are paid on time by young adults in Bristol,

and young adults in Istanbul carefully consider their financial situation, deciding whether they can afford it or not before buying something. However, there is insufficient behaviour regarding the setting up of long-term financial goals, and they are not able to pay a major expense without borrowing the money or asking family or friends to help. One of the reason for this is young adults in Bristol and Istanbul do not have sufficient knowledge about preparing a budget. In this context, they cannot control their income and expenditure (Eker, 2017). Even if they want to pay off their debts on time, they are not able to pay off unexpected expenditures. Preparation of budget is one of the subjects that must be taught to young adults through financial education. So they can control their income and expenses more easily. They can reduce their borrowing levels by using their savings instead of borrowing against unexpected expenses (Lusardi and Scheresberg, 2013).

The financial attitude score is 2.17 for Bristol and 2.12 for Istanbul. As these scores are below 3, the implication is that young adults in both Bristol and Istanbul do not consider long-term financial planning. However, young adults in Bristol are more focused on long-term financial planning than those in Istanbul, even if it is insufficient.

Young adults in Bristol and Istanbul believe that money gives them the freedom to do whatever they want. As a result of this, they are prepared to spend their money now and let the future take care of itself. Money is a tool to make friends for 79.3% of the young adults in Bristol and 69.2% of the young adults in Istanbul.

It can be clearly seen that there is a significant relationship between financial literacy and demographic variables. The average financial literacy score is 24.9 for all participants. The financial literacy score of Bristol is slightly lower at 24.8, while the financial literacy score of Istanbul is slightly higher at 25.2. The financial literacy score

for young female adults is 25.0, slightly higher than the young male adult score of 24.9. Young female adults also have a higher financial literacy score than young male adults in Bristol, whereas they score less than young male adults for financial literacy in Istanbul. It is an advantage for the society that the financial literacy level of females young adults is higher than males. Because females generally live longer than males. At the same time, their income is less than males. They also have to take a break from their careers for childcare. Therefore, the financial literacy of women is very important for society (Lusardi and Mitchell, 2008). For this reason, the financial literacy of female young adults in both cities should be improved.

There is a positive relationship between education and the financial literacy score, as young adults with a higher level of education show an increase in their financial literacy level in both Bristol and Istanbul. Young married adults have a higher financial literacy score (25.6) than young single adults (24.5). Although the male and female financial literacy scores are equal in Istanbul at 25.2, young married adults have a higher financial literacy score at 26.1, than the single adult's score of 24.0 in Bristol. Self-employed young adults have a higher financial literacy level than other working groups in Bristol and Istanbul. However, students' financial literacy level is low in Bristol and Istanbul. Young adults in Bristol and Istanbul at under the £20,000 income level both have a low level of financial knowledge, while those in the £40,000-£59,999 income level have a high level of financial literacy. However, it can be said that there is a positive relationship between financial literacy and income level for both cities because there were not enough participants who have £40,000 and over income.

In summary, in Bristol, married female young adults who have higher education, higher income and work for themselves have the highest financial literacy level. Single male

young adults who have lower education, low income and unemployed have the lowest financial literacy. In Istanbul, male young adults who have a postgraduate degree and work for themselves have highest financial literacy while female young adults who have lower secondary school education and unable to work due to sickness or ill-health have lowest financial literacy level.

Young adults financial literacy can be increased by financial education. In order to prepare an effective financial education program, the needs of the target group should be determined, there should be clear targets and careful evaluation should be made (Lusardi *et al*., 2017). Someone's attitudes and preferences play an important role in learning and putting into practice. Decisions such as saving, investing for the future and retirement planning are influenced by individual preferences. For example, it will be very unlikely that a person who does not have anxiety about the future and who does not intend to accumulate about the future will be involved in accumulation behavior. Since behaviour patterns of individuals have a significant impact on their economic wellbeing, it is important to identify these behavior dimensions in determining financial literacy levels. Behaviours of the individual such as extreme caution when shopping, paying bills on time, monitoring the personal financial situation, taking responsibility and budgeting depends on an individual's perceived financial literacy (Ergun, 2017).

Financial decisions of young adults are affected by their behavioural biases level besides financial literacy (Garcia, 2013). Generally, financial literacy affects different behavioural biases depending on the culture. Financial knowledge influences 9 out of 15 behavioural biases in Bristol while its effects on 2 out of 15 behavioural biases which are anchoring and framing biases. Financial attitude affects only categorisation

bias in Bristol while it does not affect behavioural biases in Istanbul. 5 out of 15 behavioural biases are affected by financial behaviour in Bristol while 4 out of 15 behavioural biases are influenced by financial behaviour. Also, culture affects 8 out of 15 behavioural biases in Bristol while it influences 6 out of 15 behavioural biases.

Most common biases among young adults in Bristol are anchoring, categorisation, conservatism and over-optimism biases. Young adults in Bristol trust the first knowledge they get when making a decision. They make their next decisions by taking this knowledge as a reference. At the same time, they are highly dependent on the knowledge they first obtain. And they pay more attention to the knowledge that supports their own opinions and beliefs. They also tend to classify their decisions. Financial knowledge influences anchoring, conservatism and over-optimism biases positively. It means that these common biases could not be reduced by increasing financial knowledge. To reduce these biases, young adults in Bristol should be made aware that they have behavioural biases (Montier, 2010; Pompian, 2011). Financial attitude only negatively influences categorisation bias. Categorisation bias could be reduced by increasing their financial attitude score. Financial behaviour affects anchoring, categorisation, conservatism and over-optimism biases positively. Lastly, culture influences categorisation and over-optimism biases positively. As a summary, young adults in Bristol should be aware of their behavioural biases level to reduce them. Also, good financial attitude helps to reduce their behavioural biases level.

Most common behavioural biases among young adults in Istanbul are framing, cognitive dissonance, illusion of knowledge and availability biases. They determine their behavior and thoughts according to their previous values. These values are; possible beliefs, attitudes, and needs. All these values, acquired over time or by

environmental factors, shape their personality. At the same time, they tend to prefer the most noticeable clues rather than the correct ones when deciding. In addition, the presentation of events affects the decisions of these young adults. They also think that when they get more knowledge, the accuracy of their predictions will increase (Pompian, 2011). Financial knowledge and financial behaviour influence only framing bias positively in Istanbul. Financial attitude does not affect common biases. Culture affects illusion of knowledge and availability bias positively. Cognitive dissonance is not affected by financial literacy components. As a result of this, the awareness of behavioural biases should be provided to decrease the behavioural biases level of them (Nofsinger, 2004).

Young adults in Bristol and Istanbul commonly have anchoring, conservatism, categorisation and illusion of control biases. Over-optimism, self-attribution, loss aversion and representativeness biases are less common biases among them. Young male adults have a lower level of biases than young female adults. However, young male adults in Bristol exhibit high-level biases of anchoring, over-optimism and cue competition, while young female adults in Bristol show a high level in half of the biases. Young male adults in Istanbul show high-level bias in all behavioural biases, while young female adults in Istanbul exhibit a low level of bias for self-attribution.

University-level young adults have high-level biases while postgraduate level young adults have low-level biases. Single young adults in Bristol show low-level bias for all behavioural biases, while single young adults in Istanbul show high-level bias for all behavioural biases. The behavioural biases level for single young adults is at a lower level than for married young adults in Bristol and Istanbul. However, self-employed young adults have a lower level of bias than young adults in paid employment in Bristol

and Istanbul. Students in Bristol have a lower level of biases than students in Istanbul. Young adults at the £20,000–£29,999 income level have a high level of biases while those at the £0–£19,999 income level have a low level of biases.

There is a significant relationship between financial literacy and behavioural biases. Financial knowledge, financial behaviour and culture positively affect young adults' behaviour biases, while financial attitude negatively affects young adults' behavioural biases. Table 79 indicates the relationship between financial literacy and behavioural biases. The green highlight shows the significant relationship between them and the red highlight shows an insignificant relationship.

Table 79: Summary of the Results

	Bristol				**Istanbul**				**ALL**			
Behavioural Biases	Financial Knowledge	Financial Attitude	Financial Behaviour	Culture	Financial Knowledge	Financial Attitude	Financial Behaviour	Culture	Financial Knowledge	Financial Attitude	Financial Behaviour	Culture
Representativeness												
Confirmation												
Hindsight												
Self-attribution												
Anchoring												
Conservatism												
Over-optimism												
Availability/Salience/Cue competition												
Cognitive dissonance												
Framing												

Illusion of knowledge												
Illusion of control												
Categorisation												
Loss aversion												
Overconfidence												

Note: Green colours indicates high level behavioural biases while light red colour indicates low level of behavioural biases.

According to Table 79, financial knowledge positively affects representativeness confirmation, hindsight, anchoring, conservatism, over-optimism, cognitive dissonance, framing, the illusion of knowledge, categorisation, loss aversion and overconfidence for all participants. Behavioural biases are more affected by financial knowledge in Bristol than in Istanbul. Only the anchoring and framing biases are affected by financial knowledge in Istanbul. Financial attitude has less of an effect on behavioural biases when compared with the other components. Financial behaviour has a greater impact on behavioural biases in Bristol than it does in Istanbul. Additionally, culture is a very important financial factor which affects behavioural biases.

In fact, most of the studies are not comparable because we do not yet have a common definition and measurement method to apply in academic studies related to financial literacy and behavioural biases.

6.5. Summary

The most important factor that provides to increase financial literacy level of young individuals is financial knowledge. Young adults' financial knowledge should be increased to increase financial well-being. It would not enough to only focus on financial knowledge, it needs to use in practices to increase their financial well-being. Depending on cultre, young adults have different behavioural biases level. The high

level of financial knowledge does not reduce their behavioural biases level. On the other hand, financial attitude and financial behaviour reduces their some of the behavioural biases level depending on culture. It can be clearly said that the financial literacy affects different behavioural biases depending on the culture.

Chapter Seven: Conclusion And Future Research

Overview

In this chapter, the conclusion of the research and future research will be discussed after presenting the whole process of this study. All chapters will be reviewed in this chapter. Research problem and questions, contribution, recommendations, limitation and future research, will be discussed.

7.1. Review of Chapters

In Chapter One, the background and motivation of the study have been presented. The research problem has been introduced. The research aims and objectives that were derived from the research problem has been introduced. Also, the contribution of the research has been explained.

In Chapter Two, all relevant, accessible literature has been reviewed. Key concepts such as financial literacy and financial behaviour have been clarified. Previous researches have been discussed in this chapter.

In Chapter Three, framework development of the research has been discussed in this chapter.

In Chapter Four, research purpose, research perspective, research philosophy and paradigm, research methods, research design and reliability and validity have been discussed.

In Chapter Five, Empirical findings for financial literacy, behavioural biases and the relationship between these two has been presented.

In Chapter Six, critical discussion of the findings has been revealed. The framework of the research has been updated in this chapter.

7.2. Answer to Research Problem and Questions

Sub-research Question 1: *What is the relationship between financial literacy and behavioural biases for young adults who live in British and Turkish culture?*

The aim of this sub-research question is to determine the relationship between financial literacy and behavioural biases among young adults. Thus it is investigated whether behavioural biases level of young adults can be reduced or not by increasing financial literacy. Young adults should be financially literate to make effective and accurate financial decisions. These decisions are affected not only by financial literacy but also by behavioural biases. Contrary to expectations, the high level of financial literacy does not reduce the behavioural bias levels of young adults due to the positive correlation between financial knowledge and some of the behavioural biases. There is a positive relationship between financial knowledge and 12 out of 15 behavioural biases. In addition to this, there is no relationship between some behavioural biases and financial knowledge. This result is similar with Sezer and Demir's (2015) and Kilinc and Kilic's (2018) studies.

Some of the behavioural biases levels can be reduced by a good level of financial attitude. However, having a good level of financial attitude depends on whether individuals have a good level of financial knowledge or not as financial attitude is the application of financial knowledge (OECD, 2015). Financial attitude negatively influences hindsight, categorisation and overconfidence biases in Bristol and Istanbul.

Financial behaviour affects 7 out of 15 behavioural biases. It negatively influences only representativeness bias.

The relationship between financial literacy and behavioural biases depends on culture. For example;

In Bristol, financial knowledge effects 9 out of 15 behavioural biases positively. Financial attitude influences only categorisation bias negatively; thus, categorisation bias can be reduced by a good level of financial attitude in Bristol. Financial behaviour influences 5 out of 15 behavioural biases positively.

In Istanbul, financial knowledge influences only anchoring and framing behavioural biases positively. Financial attitude does not affect behavioural biases. Financial behaviour positively affects over-optimism, framing and loss aversion biases while it negatively influences representativeness bias. Culture affects 6 out of 15 behavioural biases positively.

As a result, the relationship between financial literacy and behavioural biases differs depending on the culture. More behavioural biases are affected by financial literacy in Bristol than Istanbul. It can be said that behavioural bias level of young adults can not be reduced by high financial literacy level. Young adults are able to make good financial decisions via a high level of financial literacy. Awareness about the behavioural biases should be raised for young adults because it affects their financial decisions.

Overall, increasing financial knowledge does not reduce the behavioural biases level of young adults in Bristol and Istanbul. Financial attitude does not affect the behavioural biases in Istanbul while categorisation bias can be reduced by it in Bristol.

Representativeness bias can be reduced by good level of financial behaviour in Istanbul, while a good level of financial behaviour does not reduce behavioural biases in Bristol. Therefore, it can be said that the relationship between financial literacy and behavioural biases depends on culture.

Sub-research Question 2: What are the most common behavioural biases among young adults who live in British and Turkish culture?

According to behavioural finance, the rationality of people is not continuous and unlimited, as predicted in traditional finance. People can use some shortcuts in the decision-making process, and they may be influenced by their emotions and moods. Therefore, people can make systematic mistakes in the decision-making process and deviate from rational behaviour patterns.

Young adults have different behavioural biases depending on their culture. The most common biases among young adults in Bristol are over-optimism, anchoring, categorisation, conservatism and the illusion of control while they are framing, cognitive dissonance, the illusion of knowledge and cue competition among young adults in Istanbul.

Young adults in Bristol tend to be overoptimistic about their predictions. Because they tend to overestimate their knowledge and ability to control events, therefore, they may perceive the possible risks as low by underestimating them (Nofsinger, 2004). Young adults in Bristol predominantly prefer to invest in companies operating in their own geographic area because they intend to behave more optimistic about their geographical regions. In addition, they focus more on positive knowledge when examining the reports of the companies they invest in (Pompian, 2006). At the same time, overoptimistic bias causes the illusion of control bias in individuals (Kahneman

and Riepe, 1998). They believe that they can actually influence or at least affect the outcome of events, even though they cannot control the results of events.

Generally, people need a criterion as a reference or starting point when trying to make decisions. In this context, young adults in Bristol identify the first knowledge they learned as a reference point. For example, when someone who wants to buy a new product sees the price of that product on the internet as £1000, the reference point for that product will be £1000. When someone offers to sell the same product at £900, he/she tends to accept it automatically. As a result, he will pay £100 less than he expected to pay. However, if he had done detailed market research, he would have found the same product for £850. This quick decision made by the anchoring bias caused the loss (Pompian, 2011). Young adults in Bristol often face categorisation bias in their investment decisions. At the same time, they do not easily change their previously taken decisions against new developments. That is, they have tightly adhered to previously acquired knowledge or beliefs (Montier, 2010).

When the same event is presented to young adults in Istanbul differently, their predictions about the event are changed. They take risks in the events presented with an emphasis on the possibility of loss, but they do not take risks when presented with an emphasis on the probability of winnings. The reason for this is that they are afraid of the possibility of losing and try to act cautiously. The effects of the possibilities of losing on individuals are more than the effects of the possibilities of winning (Pompian, 2011). At the same time, young adults in Istanbul change their thoughts to suit their past actions. When they have a negative experience in the past, they change their thoughts to avoid this negativity. If they experience a positive experience, they change

their thoughts in the direction that this positive experience will take place (Montier, 2010).

Young adults in Istanbul believe that the accuracy of their predictions will increase with more knowledge. They want to have more knowledge about this. However, according to Montier (2007), more information does not increase the accuracy of the predictions but reinforces a sense of trust. In addition, they use more noticeable clues to make financial decisions. In other words, they use the most noticeable knowledge, not the most correct ones among the knowledge that can be used. This situation also causes feeling based financial decisions as well (Oran, 2008).

As a summary, behavioural biases of young adults differ depending on the culture. Over-optimism, categorisation and conservatism are the most common behavioural biases for participants in Bristol. The most common behavioural biases for participants in Istanbul are framing, cognitive dissonance, the illusion of knowledge and cue competition. These common behavioural biases that young adults in Bristol and Istanbul have to lead to many irrational financial decisions. It is not possible to reduce these behavioural biases by direct intervention, and for this, individuals need to be educated (Daniel *et al*., 2002). Also, it can not be reduced by increasing financial literacy (Sezer, 2013). In order to reduce the behavioural biases of young adults, family education is very important. Families should educate young adults about behavioural biases. After that rest of the education about behavioural biases should be given in the schools (SPK, 2012).

Sub-research Question 3*:* What are the most significant factors in relation to raising the financial literacy level of young adults?

The financial knowledge is the most important components to enhance the financial literacy level of young adults. Especially, advanced financial subjects should be taught to them. Also, financial behaviour and attitude have an important impact on financial literacy as they are the application of financial knowledge. If individuals do not use their financial knowledge, they are less likely to have a good level of financial behaviour and financial attitude. In other words, it is impossible to have good financial behaviour and financial attitude unless they have a certain level of financial knowledge and use it. Therefore, financial knowledge, especially advanced financial subjects, are the most significant factors to raise the financial literacy level of young adults.

Even if young adults have different culture, their financial literacy level is quite similar. This result is similar with OECD's (2015) research. According to OECD (2015), the financial literacy level of UK is slightly under the average while financial literacy level of Turkey is slightly above the average. In this study, the financial literacy level of Bristol is slightly under the average while financial literacy level of Istanbul is slightly above the average.

Young adults in Bristol and Istanbul do not have sufficient knowledge about complex financial issues although they have sufficient knowledge about basic financial literacy. This is a general issue for young adults and students (Knoll and Houts, 2012; Lusardi, 2013; OECD, 2015; Ergun, 2018). Firstly, risk diversification should be taught to them in order to increase their financial literacy level as it is a lesser-known subject. Young adults tend to exhibit risky behaviour but they do not know how they can manage the risks associated with their investments (Sevim *et al*., 2012). At the same time, they can be exposed to loss as they can not manage the risks and financial markets become more complicated every single day (Vijayvargy and Bahkshi, 2018).

At the same time, they do not have sufficient knowledge about compound interest. As a result of this, they can be willing to accept lower returns than expected returns (Van Rooij, 2012). In short, young adults need to be educated about effective savings strategies. When saving, the individual aims to meet the needs and wishes that may arise in the future and to prepare for possible future emergencies (Temizel and Bayram, 2011). For this reason, the individual must determine needs that may arise in their lifetime and form an expenditure plan, deciding how much of their income to spend, how much to save, and how to convert their savings to investments in the most efficient way. Thus, individuals will firstly ensure economic safety and welfare for themselves and their families and then contribute to the economic development of society. However, it is not easy for individuals to make a saving decision. Savings plans require mathematical knowledge, the ability to calculate net present value, and the ability to understand the benefits of saving early, but it requires time and effort to acquire this knowledge and skills (Altunoz, 2014). Every individual in society is expected to be financially literate, albeit at a basic level.

Young adults cannot meet their desire for consumption due to the low income earned during the period of youth, so borrowing attempts to cover the imbalance between consumption tendency and income (Gokmen, 2012; Chen and Lemieux, 2016). At the same time, most of the young adults in Bristol and Istanbul are not able to pay off unexpected expenditures without asking family or friends to help. Debt management skills should be taught to them. Also, financial education should cover the borrowing process. The first step of the borrowing process is to decide whether to borrow. The second step is to determine how much will be borrowed, depending on the cost of borrowing. During the second step, the individual needs to be able to make a rational decision and to determine the most reasonable choice by comparing debt contracts

according to their costs. If the individual has insufficient financial knowledge, they are likely to face problems such as an inability to calculate and understand the cost of borrowing, thus suffering financial difficulties within the lifetime of the debt (Robb and Sharpe, 2009).

The importance of preparing budget should be taught to them. Thus, they can manage their income and expenses easily (Selvakumar et *al*., 2018). Also, budgeting helps young adults to make better decisions, because they can compare their current spendings and planning spendings (Hogart et *al*., 2003). Young adults in Bristol and Istanbul should make a long-term financial plan rather than short-term. It requires young adults to make a plan for their retirement due to the increase in the life of people. After retirement, individuals who desire to maintain their current standard of living, or have more than the welfare of the public pension system, make savings and investments through the voluntary private pension system (Gokmen, 2012).

To summarize, in order to increase the financial literacy level of young adults in Bristol and Istanbul, complex financial subjects such as time value of money, risk diversification, effective savings strategies, preparation of the budget and long term financial plan should be taught to them.

Sub-research Question 4*:* To what extent do culture and social-demographic factors influence young adults' financial literacy and behavioural biases in Bristol and Istanbul?

The culture significantly influences financial literacy and behavioural biases level of young adults depending on social demographic factors.

Gender

Female young adults' financial literacy level is higher than male young adults financial literacy in Bristol. Male young adults in Istanbul have higher financial literacy level than females. This results are similar with GLFEC's (2017) report. Women are generally exposed to lower wages throughout their lives. Their careers are interrupted for childcare. They also live longer than men. For these reasons, it will be an advantage for them to have a higher level of financial literacy than men. Therefore, increasing the financial knowledge of females and equipping them with tools to make proper financial decisions should be a priority for policymakers (Bucher-Koenen's *et al*., 2014).

Male young adults in Bristol have a low level of behavioural biases while male young adults in Istanbul have a high level of behavioural biases. This result is similar with Frederick's (2005) study. Female young adults in Bristol have a low level of behavioural biases while female young adults in Istanbul have a high level of behavioural biases.

Education

Young adults who have a higher education have high level financial literacy in Bristol and Istanbul. In order to increase the financial literacy level of young adults their education level of individuals should be increased. Because there is a positive relationship between education level and financial literacy (Lusardi and Mitchell, 2007; Jorgensen, 2007; Mandell and Klein, 2009; Lusardi *et al*., 2014, Ergun, 2017). Studies without increasing the level of education of individuals would be costly. At the same time, financial issues can be included in educational programs in schools. In this context, placing the financial knowledge-enhancing courses in the education curriculum, providing students with the opportunity to perform application studies

related to their learning may further increase their financial knowledge and competencies.

Most of the young adults in Bristol who have postgraduate degree exhibit low level of behavioural biases while most of the young adults in Istanbul who have postgraduate degree have a high level of behavioural biases. At the same time, young adults in Bristol who have lower secondary school education have the highest level of behavioural biases while young adults in Istanbul who have university degree have the highest level of behavioural biases. High level of education increases financial literacy, but does not affect behavioural biases. In order to reduce the behavioural biases of young adults, awareness of them should be increased (Sezer and Demir, 2015).

Marital Status

Married young adults have higher financial literacy level in Bristol. Married and single young adults in Istanbul have the same level of financial literacy. There are no differences between them. All single young adults in Bristol have a low level of behavioural biases while all single young adults in Istanbul have a high level of behavioural biases in Istanbul. At the same time, all married young adults in Bristol have a high level of behavioural biases while most of the married young adults in Istanbul have a high level of behavioural biases in Istanbul.

Work Status

Students have low level financial literacy while unemployed young adults have the lowest financial literacy in Bristol and Istanbul. Generally, students have a low level of financial literacy (Jorgensen, 2007; Cameron, 2014). This is a proof that students are

not getting enough financial education. Young adults who work for themselves have higher financial literacy level in Bristol and Istanbul. In general, young adults who work for someone else have the highest behavioural biases level. Students in Bristol have a low level of behavioural biases while they have high level behavioural biases in Istanbul.

Income Level

There is a positive relationship between income level and financial literacy among young adults in Bristol and Istanbul. £0–£9,999, £10,000–£19,999 and £60,000+ income level participants in Bristol have a low level of behavioural biases while £20,000–£29,999 income level participants in Bristol have a high level of behavioural biases. £40,000–£59,999 and +£60,000 income level participants in Istanbul have a low level of financial literacy while £0–£9,999 and £20,000–£29,999 income level participants in Istanbul have a high level of behavioural biases.

7.3. Contributions

This research builds on previous works by addressing the themes found in the extant literature in a context not previously studied. That is, this study will fill the gap in the literature in relation to the determinants of financial literacy for young adults, the influence of social and cultural differences on financial literacy as well as the relationship between behavioural biases and financial literacy.

The main purpose of this study is to determine the relationship between the financial literacy level of young adults who live in British and Turkish culture and the level of behavioural biases that may cause irrationality in the financial decision making

process. In this context, it has been revealed that the behavioural biases of young adults were not reduced by increasing financial literacy level.

When it comes to the ability to make effective and accurate financial decisions, financial literacy is one of the key points to consider. According to the research results, young adults in Bristol and Istanbul have low financial literacy levels. In this context, it is clear that financial literacy education for young adults should be increased. On the other hand, financial literacy is not the only factor that is important in effective and accurate financial decision making. Behavioural biases that affect young adults' behavior also play a critical role in this process. These biases can cause investors to act irrationally and consequently make investment mistakes. It has been determined that many biases that are the subject of this research are independent of financial literacy level. Therefore, it is necessary to increase young adults' awareness of behavioural biases in addition to trying to raise their financial literacy levels.

This study contributes to the literature by main findings below:

- The most important components of financial literacy are identified by this research. It is financial knowledge. At the same time, the important financial knowledge subjects that help to increase the financial literacy of young adults is revealed. Firstly, this research contributes to the literature by finding the most important factors for financial literacy and financial knowledge. In order to increase the financial literacy level of young adults in two different towns, complex financial issues should be taught with financial education by using visual tools. This is the primary need of young adults in two different cities to increase their financial literacy levels. Besides, saving, spending and long-term

planning good financial behaviours should be developed. In addition, the importance of preparing the budget should be taught to young adults.

- Another contribution to the literature is done by highlighting of application of financial knowledge. Financial behaviour and financial attitude reflects application of having financial knowledge. Young individuals should use their financial knowledge in practices. Unless young individuals exhibit good financial behaviour, only having a high level of financial knowledge may not help them to increase their financial well-being. In other words, it would not help them unless they practically use their financial knowledge.
- This research contributes to the literature by identifying the most common behavioural biases depending on the culture. Culture significantly influences the behavioural biases level of young adults. Young adults have different behavioural biases depending on their culture. Young adults in Bristol should be informed about over-optimism, anchoring, categorisation, conservatism and illusion of control biases as they are most common behavioural biases. Young adults in Istanbul should be informed about framing, cognitive dissonance, the illusion of knowledge and cue competition biases as they are most common behavioural biases.
- Another important contribution to the literature is finding the relationship between financial literacy and behavioural biases. Thus, this may help to increase young adults' financial well-being. Young adults who have a high level of financial literacy have a high level of behavioural biases. Contrary to expectation, the behavioural biases level can not be reduced by increasing financial literacy. In order to increase financial literacy level of them, financial education should be provided according to young adults needs. In order to

reduce behavioural biases level of young adults, they should be informed about behavioural biases, and also analytical thinking skills of them should be developed.

- The findings related to social demographic factors are the other contribution of the research. These are;
    - Male and female's financial literacy level changes depending on the culture. The important point is that females financial literacy level should be higher than males because females live longer than males. Also, generally, their earnings are lower compared to men, and their careers are interrupted because of childcare. This may lead to a loss of welfare in their retirement periods. For this reason, females should have more financial literacy than males.
    - There is a positive relationship between education level and financial literacy. Young adults who have a higher education level have higher financial literacy level. Young adults should encourage to study for higher education.
    - The relationship between financial literacy and behavioural biases depends on the culture. Married young adults have higher financial literacy while married and single young adults have the same financial literacy level in Istanbul.
    - Generally, students have a low level of financial literacy. In order to increase the financial literacy level of students, financial subjects should be taught them in the school. Also, visual tools and simulation methods should be used. Simulation provides the application of knowledge for

students. Young adults who work for themselves have higher financial literacy level in both cities.

- Generally, there is a positive relationship between a high level of income and financial behaviour. High level of income may provide to get quality financial education for young adults. On the other hand, it can be said that high financial literacy young adults know how they can manage their financial situations.

Some topics such as which factors determine investor behaviour, what are the factors behind individual investor thoughts, what kind of information is taken into account when making financial decisions, how much he/she considers basic knowledge about the stock and how correctly he interprets, how effective other factors are besides a company's financial factors should be included in financial education.

7.4. Recommendations

The results of the research indicate that financial literacy affects different behavioural biases depending on the culture. However, a high level of financial literacy does not reduce behavioural biases of young adults. Financial literacy is a key factor when it comes to the ability to make effective and accurate financial decisions. In this context, it is clear that financial education should be made available to young adults to aid them in their financial wellbeing. However, financial literacy is not the only important factor in making effective and accurate financial decisions. Behavioural biases, which affect young adults' financial decisions, also play a critical role in this process. These behavioural biases can cause young adults to act irrationally and eventually make the wrong financial decisions. Financial education is very important to raise the financial literacy of young adults. On the other hand, young adults should be informed about

their behavioural biases to make rational financial decisions. Therefore, it is necessary to increase the awareness of young adults with regards to behavioural biases, as well as to increase their financial literacy level.

When the current situation of financial literacy and financial education is examined, it is seen that individuals do not understand the complex financial information, do not know the appropriate savings methods and have difficulty in using the financial information they have learned. It is observed that the level of financial literacy in studies carried out all over the world is low and they need financial education to increase their financial literacy level (Lusardi and Mitchell, 2007). Similar results have emerged in this study. Instead of a common financial education program for everyone, special financial education for population subgroups' the demands and needs may be more beneficial.

Risk diversification, time value of money, calculation of compound interest, the importance of preparation of budgeting, effective saving strategies, debt management skills and importance of long term plan for their retirement should be included financial education syllabus. Today, access to knowledge has become easy with the opportunities provided by new communication technologies. The important thing at this stage is to understand and interpret the provided knowledge. Using visual tools and simulation in financial education is also very effective. Complex issues are more easily understood by applying the learned knowledge through simulation. For this reason, the use of financial knowledge resources and the quality of financial behaviours arising from this using are important (Temizel and Bayram, 2011).

At the same time, today, the importance of financial education, which contributes to the increase of individual financial literacy, is gradually increasing, especially

considering the benefits it brings on an individual and social scale. However, the size of the target audience to be trained and the sustainability of the studies are important to gain a successful financial education strategy. In addition, many institutions and organisations should take part in the process both nationally and internationally, also developing an effective communication strategy and coordination among these institutions (TRCB, 2015). International interest in financial literacy is growing. However, most of the programmes related to finance and literacy were initiated by the financial sector rather than the field of education and focused on the financial competencies of adults rather than adolescents (OECD, 2015).

The implementation of financial education strategies and programmes requires the use of a wide variety of methods. The aim here is to deliver financial literacy education to the entire population and different target groups depending on the conditions of the countries and the preference of the population. Almost all countries with a national strategy should focus more on the young population among the target groups. As a way of doing this, they can try to offer some kind of financial education in schools. In this context, most countries also went on to develop special interactive websites on financial matters to provide detailed information and advice to consumers, in some cases (OECD, 2013).

It will not be enough to pay attention to the above mentioned factors. Periodic evaluation of the efficiency of the financial education programs carried out should be tried to measure whether the financial literacy measurement data are useful or not.

Another important point is the behavioural biases level of young adults besides financial literacy. Young adults systematically exhibit psychological behavioural biases and these biases prevent individuals from making good financial decisions (Sezer,

2013). Social demographic factors do not affect behavioural biases but culture significantly influences. Young adults have different behavioural biases depending on the culture. At the same time, high or low level of financial literacy is not effective to prevent young adults from behavioural biases. Also, young adults who have a high level of financial literacy, have a high level of behavioural biases. Therefore, analytical thinking skills should be provided and young adults should be informed about awareness of their behavioural biases.

Recommendations for financial education in practices:

- Financial education programmes should be designed for high-priority topics, which might include essential elements of financial life planning depending on national circumstances.
- Financial education is required to begin at school. Individuals need to be educated as early as possible in their lives about financial subjects.
- Public awareness should be raised about the need to enhance their understanding of financial risks. Also, the ways of protecting them from these risks should be taught through financial education.
- At a national level, financial education should be supported.
- To provide relevant, user-friendly financial knowledge to the public, specialised websites should be developed. Free information service related to finance should be provided.
- Financial institutions should be established. They should provide financial education for all group of individuals at a different level. Also, their activity should be assessed regularly by policymakers to ensure whether they meet

individuals needs or not. Also, national financial education programs should be assessed regularly.

Recommendations for Behavioural Biases:

- First of all, individuals should be aware of their behavioural biases. They should focus on data instead of stories to avoid behavioural biases. It is not easy to get a data-driven perspective and a data-driven process, as individuals often tend to adapt stories that support their beliefs.
- Individuals generally adopt views that fit their own views and opinions. To get rid of this bias, they should look for results and data that conflict with their opinions.
- Individuals should take into account any criticism about their biases. They can develop an accountability mechanism based on the criticisms made. Accountability is more successful in a reliable, cautious, transparent and clearly specified mechanism when it is part of it.
- Individuals attribute bad results to bad luck and good results to skill. Thus, they should focus on the process. Individuals, no matter how well their focus is on the process, should also assume that they have made mistakes and work actively to find them, by testing and confirming everything possible.
- Understanding a contrasting viewpoint and also appreciating it helps our own thought and can have a good influence over the accuracy of our own viewpoint.
- People tend to spread their successes and underestimate their losses, so they need to pursue their mistakes as closely as their success.
- They should make choices without haste, no matter how successful and experienced people are.

- Individuals should be aware of the fact that our emotions may influence our decisions in order to avoid the negative effects of heuristics. When they face with decisions, they should think more logically about choices and all possible options by taking time.
- A systematic review process may be developed by the individuals. This may help them to reduce their behavioural biases.
- They can re-frame or flip the problem if they view the situation in either a positive or negative framework.
- Individuals may consider different opinions that contradict their opinions to reduce their overconfidence.

7.5. Limitations and the Future Research

There is limited financial literacy and behavioural biases research in the UK and Turkey. Although some financial literacy research has been carried out in the USA and other countries, the relationship between financial literacy and behavioural biases of young adults in Bristol and Istanbul has not been investigated previously. Generally, current research has focused on the financial literacy level of students or the population as a whole. Developing a proper questionnaire is one of the limitations of this study due to the lack of other research in this field.

Another limitation of the research is to compare the results of previous studies. The behavioural biases and financial literacy levels have not been investigated for the 18–29 age group in the available literature. However, current research has examined the measurement of financial literacy for countries or students.

Additionally, it is not known whether the participants received any help in answering the survey. They may have received help from books, online resources, family or friends when answering questions. Backgrounds of the respondents are not known. It can change according to the young adults' background who is studying engineering, business, arts and education.

Another limitation is about nationalities. Most of students in Bristol consist of international students. At the same time, there are many people living in Bristol who are citizens of a different country. However, most of the students in Istanbul are home students. At the same time, most of the people living in Istanbul are Turkish citizens. This may affect the outcome of the study.

In addition to this, the survey was written in English. The survey has not been translated into the Turkish language. This could be another limitation of the study. Only participants who know English have attended the survey.

Further development of this research is possible by involving more independent variables in the ANOVA analysis and increasing the sample size. The ages of the sample size could also be expanded; this would have a great impact on the results. Also, survey questions can be translated into the Turkish language and applied in Istanbul in order to include young adults who do not know the English language. Additionally, if the research included retired adults, the findings would be more crucial and instructive.

7.6. Summary

This chapter completes the thesis as a whole. The entire research method has been briefly reviewed; summarised answers to research problems and sub-research

questions; generalised findings; addressed contributions; and presented drawbacks and possible research. While this study ends here, further research interests could be motivated by the contributions and issues it has presented and thus lead to more contributions to the related fields.

8. References

Abreu, M., 2014. Individual Investors' behavioral biases: excerto da Lição de Síntese das Provas de Agregação. *Working Paper* ISSN, No: 2182-1356. Available from: https://core.ac.uk/download/pdf/61473382.pdf [Accessed 30/05/2019].

Agnew, J.R. and Szykman, L.R., 2005. Asset allocation and information overload: The influence of information display, asset choice, and investor experience. *The Journal of Behavioral Finance*, 6(2), pp.57-70. Available from: https://doi.org/10.1207/s15427579jpfm0602_2. [Accessed 18/05/2020].

Aksoylu, S., Boztosun, D., ALTINIŞIK, F. and Baraz, E.H., 2017. A Baseline Investigation of Financial Literacy Levels: The Case of Kayseri Province. *Journal of Accounting & Finance*, (75). Available from: http://mufad.org.tr/journal-/attachments/article/897/13.pdf [Accessed 22/03/2018].

Allgood, S. and Walstad, W.B., 2016. The effects of perceived and actual financial literacy on financial behaviors. *Economic inquiry*, *54*(1), pp.675-697.

Alexander, C., Marple, J. and Jones, C., 2011. Financial literacy: the investment of a lifetime. Available from: https://www.td.com/document/PDF/economics/special/cj1111_fin_literacy.pdf [Accessed 05/ 01/2020].

Alkaya, A. and YAĞLI, İ., 2015. Finansal Okuryazarlik-Finansal Bilgi, Davraniş Ve Tutum: Nevşehir Haci Bektaş Veli Üniversitesi IIBF Öğrencileri Üzerine Bir Uygulama. Journal of International Social Research, 8(40). Available from: http://www.sosyalarastirmalar.com/cilt8/sayi40_pdf/6iksisat_kamu_isletme/alkaya_aylin.pdf {Accessed 31/10/2018].

Alquraan, T., Alqisie, A. and Al Shorafa, A., 2016. Do behavioral finance factors influence stock investment decisions of individual investors? (Evidences from Saudi Stock Market). *Journal of American Science*, 12(9), pp.72-82.

Altunöz, U., 2014. Tüketim fonksiyonu ve Türkiye için gelir-tüketim ilişkisinin ampirik analizi. In International Conference on Eurasian Economies (pp. 1-7).

Andersen, J.V., 2010. Detecting anchoring in financial markets. *Journal of Behavioral Finance*, 11(2), pp.129-133. Available from: https://www.tandfonline.com/doi/abs/10.1080/15427560.2010.483186 [Accessed 01/05/2019].

Angela, H., Parker, A.M. and Yoong, J., 2009. Defining and measuring financial literacy. Available from:https://www.rand.org/content/dam/rand/pubs/working_papers/2009/RAND_WR708.pdf [Accessed 23/10/2018].

Ardalan, K., 2012. On the role of paradigms in finance. Ashgate Publishing, Ltd.

Atkinson, A. and Messy, F.A., 2012. Measuring financial literacy: Results of the OECD/International Network on Financial Education (INFE) pilot study. Available from: https://www.oecdilibrary.org/docserver/5k9csfs90fr4en.pdf?expires=1541432537&id=id&accname=guest&checksum=A3581D3F7D6CB9136AFCD63536D0D4AD [Accessed 05/11/2018].

Australian Government Financial Literacy Foundation, 2007. Financial literacy. Australian understanding money. Financial Literacy Foundation. Available from:https://www.moneysmart.gov.au/media/209293/Australiansunderstandingmoney.pdf. [Accessed 05/12/2019].

Australian Securities & Investment Commission ASIC, 2011. Financial Literacy and Behavioural Change. Report 230. Available from: https://asic.gov.au/regulatory-resources/find-a-document/reports/rep-230-financial-literacy-and-behaviouralchange/ [Accessed 05/12/2019].

Babbie, E.R., (2010). *The Practice of Social Research*. 12th ed. Belmont, CA: Wadsworth Cengage.

Bacon, D. R., Sauer, P. L. & Young, M., 1995. Composite reliability in structural equations modeling. *Educational and Psychological Measurement,* 55(3), pp. 394-406.

Bagozzi, R. P. & Yi, Y., 1988. On the evaluation of structural equation models. *Journal of the academy of marketing science,* 16(1), pp. 74-94.

Baker, H.K. and Nofsinger, J.R., 2002. Psychological biases of investors. *Financial services review*, 11(2), p.97. Available from: https://scinapse.io/papers/172315172 [Accessed: 03/01/2019].

Baker, H.K., Filbeck, G. and Ricciardi, V., 2017. How behavioural biases affect finance professionals. *The European Financial Review*, pp.25-29.

Barber, B.M. and Odean, T., 2001. Boys will be boys: Gender, overconfidence, and common stock investment. *The quarterly journal of economics*, 116(1), pp.261-292. Available from: https://faculty.haas.berkeley.edu/odean/papers/gender/boyswillbeboys.pdf [Accessed: 11/04/2019].

Barberis, N. and Thaler, R., 2003. A survey of behavioral finance. *Handbook of the Economics of Finance*, 1, pp.1053-1128. Available from: https://econpapers.repec.org/paper/nbrnberwo/9222.htm [Accessed: 03/01/2019].

Barberis, N. and Shleifer, A., 2003. Style investing. *Journal of financial Economics*, 68(2), pp.161-199. Available from: http://faculty.som.yale.edu/nicholasbarberis/jfe_final.pdf [Accessed: 01/05/2019].

Benjamin, D.J. and Shapiro, J.M., 2005. Does Cognitive Ability Reduce Psychological Bias? Retrieved May, 16, p.2007. Available from: www.russellsage.org/research/reports/boundedcognition[Accessed:17/05/2020.

Bergner, R.M., 2011. What is behavior? And so what?. *New ideas in psychology*, 29(2), pp.147-155. Available from: http://psycnet.apa.org/record/2011-05532-008 [Accessed 01/11/2018].

Bernanke, B.S., 2006. Financial Literacy: Testimony Before the Committee on Banking, Housing, and Urban Affairs of the United States Senate. Board of Governors of the Federal Reserve System. Available from: https://ideas.repec.org/p/fip/fedgsq/205.html [01/11/2018].

Bhushan, P., 2014. Relationship between financial literacy and investment behavior of salaried individuals. *Journal of Business Management & Social Sciences Research* (JBM&SSR), 3(5), 82-87.

Bird, C.L., Şener, A. and Coşkuner, S., 2014. Visualizing financial success: planning is key. *International Journal of Consumer Studies*, 38(6), pp.684-691. Available from: https://onlinelibrary.wiley.com/doi/pdf/10.1111/ijcs.12141 [Accessed 14/03/2018].

Blunch, N., 2012. *Introduction to structural equation modelling using IBM SPSS statistics and AMOS.* 2nd ed. Thousand Oaks: Sage.

Bodie, Z., 2006. A note on economic principles and financial literacy. *Networks Financial Institute Policy Brief*, (2006-PB), p.07. Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=923561[Accessed 24/10/2018].

Bollen, K. A., 2002. Latent variables in psychology and the social sciences. *Annual review of psychology,* 53(1), pp. 605-634.

Bollen, K. A., 2014. *Structural equations with latent variables.* New York: John Wiley & Sons.

Borden, L.M., Lee, S.A., Serido, J. and Collins, D., 2008. Changing college students' financial knowledge, attitudes, and behavior through seminar participation. *Journal of family and economic issues*, 29(1), pp.23-40. Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.321.7730&rep=rep1&type=pdf [Accessed 06/01/2020].

Bosshardt, W. and Walstad, W.B., 2014. National standards for financial literacy: Rationale and content. *The Journal of Economic Education*, 45(1), pp.63-70. Available from: https://www.tandfonline.com/doi/abs/10.1080/00220485.2014.859963 [Accessed: 27/12/2018].

Brians, C.L., 2016. *Empirical Political Analysis: Pearson New International Edition CourseSmart eTextbook*. Routledge.

Braun, V. and Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), pp.77-101.

Brockman, P. and Michayluk, D., 2015. How Does Financial Literacy Affect the Savings Decision?. *CIFR Paper*, (078).

Brown, M., Henchoz, C. and Spycher, T., 2018. Culture and financial literacy: Evidence from a within-country language border. *Journal of Economic Behavior & Organization*, *150*, pp.62-85. doi: 10.1016/j.jebo.2018.03.011.

Bucher-Koenen, T. and Ziegelmeyer, M., 2011. Who lost the most? Financial literacy, cognitive abilities, and the financial crisis. *ECB Working Paper Series 1299*. Available from:https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1299.pdf?ce13373f9d7d8fc4eb2fe7e04582b9 [Accessed 18/10/2018].

Bucher, K.T., Lusardi, A., Alessie, R. and van Rooij, M., 2014. *How Financially Literate are Women? An Overview and New Insights* (No. 201419). Munich Center for the Economics of Aging (MEA) at the Max Planck Institute for Social Law and Social Policy. Available from: http://www.nber.org/papers/w20793 [Accessed 23/05/2020].

Bukszar, E. and Connolly, T., 1988. Hindsight bias and strategic choice: Some problems in learning from experience. *Academy of Management Journal*, 31(3), pp.628-641. Available from: https://psycnet.apa.org/record/1989-10355-001 [Accessed 29/04/2019].

Burns, R. P. & Burns, R., 2008. *Business research methods and statistics using SPSS.* 1st ed. London: Sage.

Byrne, B. M., 2013. *Structural equation modeling with AMOS: Basic concepts, applications, and programming.* 2nd ed. New York: Routledge.

Caldentey Pérez, E. and Vernengo, M., 2010. *Modern finance, methodology and the global crisis* (No. 2010-04). Working Paper.

Cameron, M.P., Calderwood, R., Cox, A., Lim, S. and Yamaoka, M., 2014. Factors associated with financial literacy among high school students in New Zealand.

International Review of Economics Education, 16, pp.12-21. Available from: https://ideas.repec.org/a/eee/ireced/v16y2014ipap12-21.html [Accessed 10/05/2018].

Capuano, A. and Ramsay, I., 2011. What causes suboptimal financial behaviour? An exploration of financial literacy, social influences and behavioural economics. *An Exploration of Financial Literacy, Social Influences and Behavioural Economics (March 23, 2011). U of Melbourne Legal Studies Research Paper*, (540). Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1793502 [Accessed 01/11/2018].

Chavali, K. and Mohan Raj, P., 2016. Impact of demographic variables and risk tolerance on investment decisions: an empirical analysis. *International journal of economics and financial issues*, 6(1), pp.169-175.

Chen, Z. and Lemieux, C.M., 2016. Financial knowledge and behaviors of Chinese migrant workers: An international perspective on a financially vulnerable population. *Journal of Community Practice*, 24(4), pp.462-486.

Christelis, D., Jappelli, T. and Padula, M., 2010. Cognitive abilities and portfolio choice. *European Economic Review*, 54(1), pp.18-38. Available from: https://www.sciencedirect.com/science/article/pii/S0014292109000579 [Accessed 09/11/2019].

City Bristol Council (2018). Bristol Economic Briefing. Available from: https://www.bristol.gov.uk/documents/20182/33191/Bristol+Economic+Briefing+September+2017/bc9009d0-ef38-f28f-22bc-0e5c6635eefd [Accessed 15/07/2018].

Crain, S.J., 2013. Are universities improving student financial literacy? A study of general education curriculum. *Journal of Financial Education*, pp.1-18. Available from: https://www.jstor.org/stable/41948694?seq=1#page_scan_tab_contents [Accessed 22/03/2018].

Creswell, J. W., 2003. *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Creswell, J.W., 2007. *Qualitative inquiry and Research Design – Choosing Among Five Approaches*, London: Sage Publications Ltd.

Crowther, D. and Lancaster, G., 2012. *Research methods*. Routledge.

Daniel, K., Hirshleifer, D. and Teoh, S.H., 2002. Investor psychology in capital markets: Evidence and policy implications. *Journal of monetary economics*, 49(1), pp.139-209.

Das, M. and Das, H., 2001. Business students' perceptions of best university professors: Does gender role matter?. *Sex roles*, 45(9-10), pp.665-676.

Daşdöğen, S., 2015. Household Indebtedness And Financial Literacy In Turkey. *Master of Arts in Economics, Boğaziçi University Social Sciences Institute,* İstanbul. Available from: https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp [Accessed 21/03/2018].

Davidoff, F., 2019. Understanding contexts: how explanatory theories can help. *Implementation Science*, *14*(1), p.23.

Delaune, L.D., Rakow, J.S. and Rakow, K.C., 2010. Teaching financial literacy in a co-curricular service-learning model. *Journal of Accounting Education*, 28(2), pp.103-113. Available from: https://ac.els-cdn.com/S0748575111000273/1-s2.0S0748575111000273main.pdf?_tid=60f0e21cae3041faa9ab1acc543583ab&acdnat=1521737703_3726dedd6f5f5f796eb8bf1aac40b495 [Accessed 21/03/2018].

Denscombe, M., 2010. *The Good Research Guide for Small Scale Research Projects* (4th ed.). Buckingham: Open University Press.

Dervishaj, B., 2018. Psychological Biases, Main Factors of Financial Behaviour-A Literature Review. *European Journal of Medicine and Natural Sciences*, 2(2), pp.54-64. Available from: http://journals.euser.org/files/articles/ejnm_v1_i2_18/Blerina.pdf [Accessed 29/05/2019].

Economist, 2008. *Getting It Right on the Money*. Available from: https://www.economist.com/briefing/2008/04/03/getting-it-right-on-the-money [Accessed 30/10/2018].

Eker, F., 2017. Finansal Farkındalık, Finansal Okuryazarlık Ve Finansal Erişim Düzeyleri Üzerine Bir Çalışma: Silifke Ticaret Ve Sanayi Odası Örneği. *Toros Üniversitesi Sosyal Bilimler Enstitüsü*, Mersin. Available from: https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp [Accessed 31/10/2018].

Ergün, K., 2018. Financial literacy among university students: A study in eight European countries. *International journal of consumer studies*, 42(1), pp.2-15. Doi: https://doi.org/10.1111/ijcs.12408 [Accessed 14 March 2018].

Erner, C., Goedde-Menke, M. and Oberste, M., 2016. Financial literacy of high school students: Evidence from Germany. *The Journal of Economic Education*, 47(2), pp.95-105. Doi: 10.1080/00220485.2016.1146102 [Accessed 25/07/2018].

European Banking Federation, 2015. The importance of the Financial Education. *EBF Report*. Available from: https://www.ebf.eu/priorities/financial-education/ [Accessed 07/01/2020].

Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D. and Sunde, U., 2018. Global evidence on economic preferences. *The Quarterly Journal of Economics*, 133(4), pp. 1645-1692.Available from: https://academic.oup.com/qje/article/133/4/1645/5025666 [Accessed 05/05/2020].

Financial Literacy Foundadtion, 2007. *Financial literacy: Australians Understanding Money*. Available from: https://www.moneysmart.gov.au/media/209293/australians-understanding-money.pdf [Accessed 09/01/2020].

Financial Times Advisor, 2018. *Five Things to Know About the Financial Illiteracy Crisis*. Friday Highlight March 2. Available from: https://www.ftadviser.com/your-industry/2018/03/02/five-things-to-know-about-the-financial-illiteracy-crisis/?page=1 [Accessed 16/11/2018].

Frankfurter, G.M., 2007. *Theory and reality în financial economics: essays toward a new political finance*. World Scientific.

Friedman, J. and Kraus, W., 2011. *Engineering the financial crisis: Systemic risk and the failure of regulation*. University of Pennsylvania Press.

Frederick, S., 2005. Cognitive reflection and decision making. *Journal of Economic perspectives*, 19(4), pp.25-42.

Gelo, O., Braakmann, D. and Benetka, G., 2008. Quantitative and qualitative research: Beyond the debate. *Integrative psychological and behavioral science*, *42*(3), pp.266-290.

Gervais, S. and Odean, T., 2001. Learning to be overconfident. *Review of financial studies*. Available from: https://faculty.haas.berkeley.edu/odean/Papers%20current%20versions/learningRFS.pdf (11/04/2019).

Gill, J. and Johnson, P., 2002. *Research methods for managers*. Sage Publications - London.

Glaser, B.G., Strauss, A.L. and Strutzel, E., 1968. The discovery of grounded theory; strategies for qualitative research. *Nursing research*, *17*(4), p.364.

Global Financial Literacy Excellence Centre (GFLEC) 2017. *The Gender Gap in Financial Literacy: A Global Perspective*, Available from: https://gflec.org/wpcontent/uploads/2017/07/The-Gender-Gap-in-Financial-Literacy-A-GlobalPerspective-Report.pdf?x87657 [Accessed 22/05/2020].

Goetzmann, W.N. and Peles, N., 1997. Cognitive dissonance and mutual fund investors. *Journal of financial Research*, 20(2), pp.145-158. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.14756803.1997.tb00241.x [Accessed 29/04/2019].

Gokmen, H., 2011. *Finansal okuryazarlık* (Vol. 43). Hiperlink eğit. ilet. yay. san. tic. ve ltd. sti.

Guardian, 2017. *We Will All Pay the Price for Financial Illiteracy*. Sat. 27 May. Available from: https://www.theguardian.com/money/2017/may/27/financialilliteracy-young-peopleoecd-study [Accessed 16/11/2018].

Guba, E. G. & Lincoln, Y., 2005. *Paradigmatic controversies, contradictions & emerging confluences' in The Sage Handbook of Qualitative Research*. 3rd Edn. California: Sage.

Guest, R. 2017. Financial Literacy Is A Public Policy Problem. The Conversation. *Business and Economy*. 22 Oct. Link: https://theconversation.com/financial-literacy-is-a-public-policy-problem-84695 [Accessed 21 March 2018].

Gutter, M., Copur, Z. and Garrison, S., 2010. Financial capabilities of college students from states with varying financial education policies. Denver, CO: *National Endowment for Financial Education*. Available from: https://www.nefe.org/_images/research/FinancialEducationMandatesReport/FinancialEducation-Mandates-Report-Executive-Summary.pdf [Accessed 10/01/2020].

Hair, J. F., Black, W. C., Babin, J. B. & Anderson, E. R., 2010. *Multivariate Data Analysis: A Global Perspective.* 7th ed. Essex: Pearson Education Limited.

Hamarat, B. and Ercan, Ö.Z.E.N., 2015. Türkiye'de tasarruf tercihlerini etkileyen değişkenlerin kanonik korelasyon analizi ile belirlenmesi. *Journal of Life Economics*, 2(1), pp.47-74.

Hayta, B., 2011. *Aile Finans Sistemi İlişkileri*, Ankara: Gazi Publishing, October.

Heale R, T., 2015. A Validity and reliability in quantitative studies. *Evidence based nursing*.18:66-67.

Hearn, R.R., 2012. From Practice to Theory: An exploratory research study of the relevance of museum studies curriculum to museum professionals.

Henager, R. and Mauldin, T., 2015. Financial literacy: The relationship to saving behavior in low-to moderate-income households. *Family and Consumer Sciences*

Research Journal, 44(1), pp.73-87. Available from: https://doi.org/10.1111/fcsr.12120 [Accessed 17/05/2020].

Heron, J., 1996. *Co-Operative Inquiry: Research into the Human Condition*, Sage Publication: London.

Hilgert, M.A., Hogarth, J.M. and Beverly, S.G., 2003. Household financial management: The connection between knowledge and behavior. *Fed. Res. Bull*., 89, p.309. Available from: https://www.federalreserve.gov/pubs/bulletin/2003/0703lead.pdf [Accessed 21 March 2018].

Hirshleifer, D., 2001. Investor psychology and asset pricing. *The journal of Finance*, 56(4), pp.1533-1597. Available from: https://www.bus.umich.edu/pdf/mitsui/nttdocs/hirshleifer-Investor_Psychology.pdf [Accessed 08/01/2019].

Hoffmann, A.O. and Post, T., 2014. Self-attribution bias in consumer financial decision-making: How investment returns affect individuals' belief in skill. *Journal of Behavioral and Experimental Economics*, 52, pp.23-28. Available from: https://reader.elsevier.com/reader/sd/pii/S2214804314000597?token=a0aab46ae16a1af3d92ab3baf000e3ae1f740f582551b51acef883b7c398a9c41e0bbdf2b8447f7adee303193877cb12 [Accessed 28/05/2019].

Hogarth, J.M., Beverly, S.G. and Hilgert, M., 2003. Patterns of financial behaviors: Implications for community educators and policy makers. Available from: https://www.federalreserve.gov/communityaffairs/national/CA_Conf_SusCommDev/pdf/hogarthjeanne.pdf [Accessed 08/01/2020].

Hu, L.T. and Bentler, P.M., 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, 6(1), pp.1-55.

Hung, A., Parker, A.M. and Yoong, J., 2009. Defining and measuring financial literacy. *RAND Labour and Population Working Paper WR-708*. Available from:

https://www.rand.org/content/dam/rand/pubs/working_papers/2009/RAND_WR708.pdf [Accessed 08/01/2020].

Huston, S.J., 2010. Measuring financial literacy. *Journal of consumer affairs*, 44(2), pp.296-316. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/j.1745-6606.2010.01170.x [Accessed 05/01/20].

Iannicola, D. Jr., 2011. Financial Education and Financial Stability*: A Case Study*, Paper presented at *International Conference on Financial Education and Financial Awareness: Challenges, Opportunities and Strategies*, Istanbul, Turkey". Available from:http://www3.tcmb.gov.tr/konferanslar/financial_education/session1/Dan_Iannicola_Presentation.pdf [Accessed 21/03/2018].

Inaishi, R., Toya, K., Zhai, F. and Kita, E., 2010. Effect of overconfident investor behavior to stock market. *Journal of Advanced Computational Intelligence and intelligent informatics*, 14(6), pp.661-668.

INFE, O., 2009. Financial Education and the Crisis: Policy Paper and Guidance.

Jackson, E., 2013. Choosing a methodology: Philosophical underpinning. *Practitioner Research in Higher Education*, 7(1), pp.49-62. Available from: http://194.81.189.19/ojs/index.php/prhe [Accessed 05/10/2020].

Jappelli, T. and Padula, M., 2013. Investment in financial literacy and saving decisions. *Journal of Banking & Finance*, 37(8), pp.2779-2792. Available from: https://econpapers.repec.org/article/eeejbfina/v_3a37_3ay_3a2013_3ai_3a8_3ap_3a2779-2792.htm [Accessed 11/01/2020].

Jariwala, H., 2011, March. Financial literacy: A call for an attention. In Articles and Case Studies: *Inclusive & Sustainable Growth Conference* (Vol. 1, No. 1). Available from: https://www.amluwood.com/2018/05/a-call-for-attension.html [Accessed 24/10/2018].

Jariwala, H., 2014. To study the level of financial literacy and its impact on investment decision-an in depth analysis of investors in Gujarat State. Available from:

http://shodhganga.inflibnet.ac.in/bitstream/10603/39626/1/phd%20thesis%20by%20harsha%20jariwala.pdf [Accessed 17/10/2018].

Jonson, B. and Christensen, L., 2008. Educational research: qualitative, quantitative and mixedapproach.

Jlassi, M., Naoui, K. and Mansour, W., 2014. Overconfidence behavior and dynamic market volatility: evidence from international data. *Procedia Economics and Finance*, 13, pp.128-142. Available from: https://core.ac.uk/download/pdf/82395598.pdf [Accessed 25/05/2019].

Jorgensen, B.L., 2007. *Financial literacy of college students: Parental and peer influences* (Doctoral dissertation, Virginia Tech). Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.536.9199&rep=rep1&type=pdf {Accessed 02/11/2018].

Kahneman, D. and Tversky, A., 1973. On the psychology of prediction*. Psychological review*, 80(4), p.237. Available from: https://psycnet.apa.org/record/1974-02325-001 [Accessed: 30/04/2019].

Kahneman, D. and Tversky, A., 2013. Prospect theory: An analysis of decision under risk. *In Handbook of the fundamentals of financial decision making: Part I* (pp. 99-127). Available from: https://www.uzh.ch/cmsssl/suz/dam/jcr:0000000064a05b1c000000003b7ec704/10.05-kahneman-tversky-79.pdf [Accessed: 04/01/2019].

Kahneman, D. and Riepe, M.W., 1998. Aspects of investor psychology. *Journal of portfolio management*, 24(4), pp.52-+. Doi:10.3905/jpm.1998.409643 [Accessed 15/08/2018].

Karabacak, S., 2013. Finansal Okuryazarlık ve Kurumsal Yatırım. Kurumsal Yatırımcı. 46-47. Available from: https://issuu.com/tkyd/docs/tkyd19pdf [Accessed 02/11/2018].

Katarachia, A. and Konstantinidis, A., 2014. Financial education and decision making processes. *Procedia Economics and Finance*, 9, pp.142-152. Available from: https://ac.elscdn.com/s221256711400015x/1s2.0s221256711400015xmain.pdf?_tid

=f6fd2aa7017446eb92ed4caf89f20838&acdnat=1539783085_4adfefb6ba31167c70a85aec1e84b551 [Accessed 17/10/2018].

Kempson, E., 2009. Framework for the development of financial literacy baseline surveys: A first international comparative analysis. *OECD Working Papers on Finance, Insurance and Private Pensions*. Available from: https://www.researchgate.net/publication/46456766_Framework_for_the_Development_of_Financial_Literacy_Baseline_Surveys_A_First_International_Comparative_Analysis [Access 17/12/2019].

Kim, M., Choi, S. and Lee, J., 2017. Economic system and financial literacy: Evidence from North Korean refugees*. Emerging Markets Finance and Trade*, 53(11), pp.2505-2527.

Kivunja, C. and Kuyini, A.B., 2017. Understanding and applying research paradigms in educational contexts. *International Journal of higher education*, *6*(5), pp.26-41.

Kiyosaki, R.T. and Lechter, S.L., 2001. *Rich Dad Poor Dad: What the Rich Teach Their Kids About Money-That the Poor and the Middle Class Do Not!*. Business Plus.

Klapper, L., Lusardi, A. and Panos, G.A., 2013. Financial literacy and its consequences: Evidence from Russia during the financial crisis. *Journal of Banking & Finance*, 37(10), pp.3904-3923.

Knoll, M.A. and Houts, C.R., 2012. The financial knowledge scale: An application of item response theory to the assessment of financial literacy. *Journal of Consumer Affairs*, 46(3), pp.381-410. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1745-6606.2012.01241.x [Accessed 18/10/2018].

Koksal. A., and Osmanoglu, H., 2013. *Gelecege Yatirim*, Scala Publishing, Istanbul.

Koropp, C., Kellermanns, F.W., Grichnik, D. and Stanley, L., 2014. Financial decision making in family firms: An adaptation of the theory of planned behavior. *Family Business Review*, 27(4), pp.307-327. Doi: 10.1177/ 0894486514522483 [Accessed 01/11/2018].

KPMG, 2018. Finansal Okuryazar mısınız?. Available from: https://home.kpmg.com/tr/tr/home/gorusler/2018/04/finansal-okuryazar-misiniz.html [Accessed 20/11/2018].

Kraemer, K.L., 1991. Introduction. Paper presented at the Information Systems Research Challenge: Survey Research Methods.

Kretschmer, T. and Pike, A., 2010. Links between nonshared friendship experiences and adolescent siblings' differences in aspirations. *Journal of adolescence*, 33(1), pp.101-110. Available from: http://dx.doi.org/10.1016/j.adolescence.2009.05.001 [Accessed: 01/11/2018].

Kruger, P., Landier, A. and Thesmar, D., 2012. Categorization bias in the stock market. *Catolica Lisbon, school of business and economics*. Available from: https://www.cfr-cologne.de/download/kolloquium/2012/kruegerlandierthesmar_categorization.pdf [Accessed 29/05/2019].

Kubilay, B. and Bayrakdaroglu, A., 2016. An empirical research on investor biases in financial decision-making, financial risk tolerance and financial personality. *International Journal of Financial Research*, 7(2), pp.171-182. Available from: https://econpapers.repec.org/article/jfrijfr11/v_3a7_3ay_3a2016_3ai_3a2_3ap_3a171-182.htm [Accessed 17/10/2018].

Kunovskaya, I., 2010. *The impact of financial literacy on use of financial services in Russia* (Doctoral dissertation, University of Georgia). Available from: https://getd.libs.uga.edu/pdfs/kunovskaya_irina_201005_phd.pdf [Accessed 10/06/2018].

Langer, E.J., 1975. The illusion of control. *Journal of personality and social psychology*, 32(2), p.311. Available from: https://pdfs.semanticscholar.org/136e/9cf6b5a4d17dbe8400fa5d7f4bf3ad01f6ac.pdf [Accessed 04/04/2019].

Leedy, P.D. and Ormrod, J.E., 2001. Practical Research: Planning and Design, Merrill Prentice Hall. *New Jersey*.

Leedy, P. and Ormrod, J., 2010. Practical Research planning and design 9th edition Boston.

Leonard, M.D.L., 2012. Risk preferences and expected utility: Evidence from labor supply data. *Economic Inquiry*, 50(1), pp.264-276. Doi:10.1111/j.1465-7295.2011.00389.x [Accessed 17/05/2020].

Lindbeck, A., 1997. Incentives and social norms in household behavior. *The American Economic Review*, 87(2), pp.370-377. Available from: https://scholar.google.com/scholar_lookup?title=Incntives%20and%20social%20norms%20in%20household%20behavior&publication_year=1997&author=A.%20Lindbeck [Accessed 05/05/2020].

Loerwald, D. and Stemmann, A., 2016. Behavioral finance and financial literacy: Educational implications of biases in financial decision making. *In International handbook of financial literacy* (pp. 25-38). Springer, Singapore.

Lusardi, A., 2003. Saving and the effectiveness of financial education. *Pension Research Council* WP2003-14. Available from: https://www.dartmouth.edu/~alusardi/Papers/Journal_Transformation.pdf [Accessed: 18/10/2018].

Lusardi, A. and Mitchell, O.S., 2008. Planning and financial literacy: How do women fare?. *American Economic Review*, 98(2), pp.413-17. Available from: https://www.aeaweb.org/articles?id=10.1257/aer.98.2.413 [Accessed 30/05/2018].

Lusardi, A. and Tufano, P., 2009. *Debt literacy, financial experiences, and overindebtedness* (No. w14808). National Bureau of Economic Research.

Lusardi, A., Mitchell, O.S. and Curto, V., 2009. *Financial literacy and financial sophistication among older Americans* (No. w15469). National Bureau of Economic Research.

Lusardi, A., Mitchell, O.S. and Curto, V., 2010. Financial literacy among the young. *Journal of consumer affairs*, 44(2), pp.358-380. Available from: http://www.dartmouth.edu/~alusardi/Papers/lusardi_tufano.pdf[Accessed 17/10/2018]

Lusardi, A., 2013. The economic importance of financial literacy for students. Available from:http://annalusardi.blogspot.com.tr/2013/04/the-economic-importanceoffinancial.html. [Accessed: 10/01/2020].

Lusardi, A. and Scheresberg, C.D.B., 2013. *Financial literacy and high-cost borrowing in the United States* (No. w18969). National Bureau of Economic Research. Available from: https://ideas.repec.org/p/nbr/nberwo/18969.html [Accessed 10/01/2020].

Lusardi, A. and Mitchell, O.S., 2014. The economic importance of financial literacy: Theory and evidence. *Journal of economic literature*, 52(1), pp.5-44. Doi: 10.1257/jel.52.1.5 [Accessed 17/05/2018].

Lusardi, A., Michaud, P.C. and Mitchell, O.S., 2017. Optimal financial knowledge and wealth inequality. *Journal of Political Economy*, 125(2), pp.431-477.

Mackenzie, N. and Knipe, S., 2006. Research dilemmas: Paradigms, methods and methodology. *Issues in educational research*, *16*(2), pp.193-205.

Mahdzan, N. S. and Tabiani, S., 2013. The Impact of Financial Literacy on Individual Saving: An Explanatory Study in the Malaysian Context. *Transformations in Business&Economics*, 12, 1(28), 41-55.

Martin, M., 2007. A literature review on the effectiveness of financial education. *FRB Richmond Working Paper No. 07-03*. Doi:10.2139/ssrn.2186650 [Accessed 12/11/2018].

Massa, M. and Simonov, A., 2005. Behavioral biases and investment. *Review of Finance*, 9(4), pp.483-507.

Masche, J.G., 2010. Explanation of normative declines in parents' knowledge about their adolescent children. *Journal of Adolescence*, 33(2), pp.271-284. Doi:10.1016/j.adolescence.2009.08.002 [Accessed: 01/11/2018].

Mason, C.L.J. and Wilson, R.M.S., 2000. Conceptualising fi-financial literacy. *Occasional paper, 7*. Available from: https://dspace.lboro.ac.uk/dspace-jspui/handle/2134/2016 [Accessed 21/03/2018].

Mandell, L., 2006. Financial literacy: If it's so important, why isn't it improving?. *Networks Financial Institute Policy Brief*, (2006-PB), p.08. Available from: http://www2.indstate.edu/business/nfi/leadership/briefs/2006-PB-08_Mandell.pdf [Accessed 08/11/2018].

Mandell, L. and Klein, L.S., 2009. The impact of financial literacy education on subsequent financial behavior. *Journal of Financial Counseling and Planning*, 20(1). Available from: https://files.eric.ed.gov/fulltext/EJ859556.pdf [Accessed 05/01/2020].

McNabb, D.E., 2002. *Research methods in public administration and nonprofit management*. ME Sharpe.

Morgan, D.L., 1998. Practical strategies for combining qualitative and quantitative methods: Applications to health research. *Qualitative health research*, 8(3), pp.362-376.

Merkle, C., 2014. Financial Loss Aversion Illusion. *American Economic Association*, Availablefrom:https://www.aeaweb.org/aea/2015conference/program/retrieve.php?pdfid=172 [Accessed 31/05/2019].

Mien, N.T.N. and Thao, T.P., 2015, July. Factors affecting personal financial management behaviors: Evidence from Vietnam. *In Proceedings of the Second Asia-Pacific Conference on Global Business, Economics, Finance and Social Sciences (AP15 Vietnam Conference)* (pp.10-12).

Miller, M., Godfrey, N., Levesque, B. and Stark, E., 2009. The Case for Financial Literacy in Developing Countries: Promoting Access to Finance by Empowering Consumers. *World Bank, DFID, OECD, and CGAP joint note*. Available from: http://siteresources.worldbank.org/intmnaregtoppovred/resources/decmenaflagshipfinancialinclusion.pdf [Accessed 21/03/2018].

Milliyet, 2017. *İşte Türkiye'nin Finansal Okuryazarlık Haritası*. 31.10.2017 15:54. Available from: http://uzmanpara.milliyet.com.tr/haber-detay/gundem2/iste-turkiyenin-finansal-okuryazarlik-haritasi/75000/75361/ [Accessed 21/11/2018].

Montier, J., 2007. B*ehavioural Investing: A Practitioner's Guide to Applying Behavioural Finance*, ISBN: 978-0-470-51670-6.

Mulaik, S. A., James, L.R., Van Alstine, J., Bennett, N., Lind, S. and Stilwell, C.D., 1989. Evaluation of goodness-of-fit indices for structural equation models. *Psychological bulletin,* 105(3), pp. 430-445.

Nassaji, H., 2015. Qualitative and descriptive research: Data type versus data analysis.

Nelson, C. and Wambugu, A., 2008. *Financial education in Kenya: scoping exercise report*. FSD Kenya. Available from: http://s3-eu-central-1.amazonaws.com/fsd-circle/wpcontent/uploads/2015/08/30095844/08.08.FSD_Financial_Education_Kenya.pdf [27/12/2018].

Neveu, R.P., 1981. *Fundamentals of managerial finance*. Thomson South-Western.

NFEC, 2018. *Experts Define Financial Literacy*. Available from: https://www.financialeducatorscouncil.org/define-financial-literacy [Accessed 25/10/2018].

Nofsinger, J. R., 2004. *The Psychology of Investing*. New Jersey: Prentice Hall.

Noori, M., 2016. Cognitive reflection as a predictor of susceptibility to behavioral anomalies. *Judgment and Decision Making*, 11(1), p.114. Available from: https://eds-aebscohostcom.bathspa.idm.oclc.org/eds/pdfviewer/pdfviewer?vid=1&sid=c020a6b6-277e-4762- accf-5f0f2e434449%40sessionmgr4010 [Accessed: 28/05/2019].

OECD, 2006. The Importance of Financial Education. *Policy Brief*. July. Available from: http://www.oecd.org/finance/financial-education/37087833.pdf [Accessed: 28/12/2018].

OECD, 2009. Financial Literacy and Consumer Protection: Overlooked Aspects of the Crisis. *OECD Publishing*. Available from: http://www.oecd.org/finance/financialmarkets/43138294.pdf [Accessed 21 March 2018].

OECD and INFE, 2011. Measuring Financial Literacy: Questionnaire and Guidance Notes for Conducting an Internationally Comparable Survey of Financial Literacy. Available from: https://www.oecd.org/finance/financialeducation/49319977.pdf [Accessed 25/03/2018].

OECD, 2012. PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy. Available from: https://www.oecd.org/pisa/pisaproducts/PISA%202012%20framework%20ebook_final.pdf [Accessed 15/12/2019].

OECD, 2013. The Role of Financial Education in Financial Inclusion: Evidence, Policies and Illustrative Case Studies. Available from: https://www.microfinancegateway.org/sites/default/files/mfgenpapertheroleoffinancial-education-in-financial-inclusion-oecdinfe-evidence-policies-and-illustrative-case-studies-jun-2013.pdf [Accessed 13/12/2019]

OECD, 2013. Improving Financial Education Effectiveness through Behavioural Economics. *OECD Publishing*. Available from: https://www.oecd.org/daf/fin/financialeducation/TrustFund2013_OECDImproving_Fin_Ed_effectiveness_through_Behavioural_Economics.pdf [Accessed 19/10/2018].

OECD, 2015. PISA 2015 Results (Volume IV) Students' Financial Literacy. Available from:https://read.oecdilibrary.org/education/pisa2015resultsvolumeiv_9789264270282-en#page1 [Accessed 12/07/2018].

OECD, 2017. PISA 2015 Assessment And Analytical Framework: Science, Reading, Mathematic, Financial Literacy And Collaborative Problem Solving. Available from: https://www.oecdilibrary.org/docserver/97892642818206en.pdf?expires=1602087424&id=id&accname=guest&checksum=8390C550D8F088A240AC036C2C993923 [Accessed 08/10/2020].

OECD, 2018. The Application of Behavioural Insights to Financial Literacy and Investor Education Programmes and Initiatives. Available from: http://www.oecd.org/finance/TheApplicationofBehaviouralInsightstoFinancialLiteracy-and-Investor-Education-Programmes-and-Initiatives.pdf [Accessed 22/10/2018].

ORAN, J.S., 2008. Davranişçi Finans: Fildişi Kuleler Sarsiliyor. *Öneri Dergisi*, 8(29), pp.33-42.

OECD (2019), Employment Outlook, https://doi.org/10.1787/9ee00155-en.

Ozdemir, F. S., 2011. *Finansal Raporlama Sistemlerinin Bilginin İhtiyaca Uygunluğu Açısından Değerlendirilmesi: İMKB Şirketlerinde Finansal Başarısızlık Tahminleri Yönüyle Bir Uygulama*. (Doctoral Dissertation Thesis) Ankara, Ankara Üniversitesi Sosyal Bilimler Enstitüsü.Available from: http://acikarsiv.ankara.edu.tr/browse/6100/ [Acceseed 31/10/2018].

PACFC, 2013. Final Report: President's Advisory Council on Financial Capability. *Washington, DC: President's Advisory Council on Financial Capability*. Available from: https://www.treasury.gov/resourcecenter/financialeducation/Documents/PACFC%20final%20report%20revised%2022513%20(8)_R.pdf [Accessed 12/06/2018].

Paiella, M., 2016. Financial literacy and subjective expectations questions: A validation exercise. *Research in Economics*, 70(2), pp.360-374. Available from: https://ideas.repec.org/a/eee/reecon/v70y2016i2p360-374.html [Accessed21/03/2018].

Park, Y.S., Konge, L. and Artino Jr, A.R., 2020. The positivism paradigm of research. *Academic Medicine*, 95(5), pp.690-694. doi: 10.1097/acm.0000000000003093.

Pathak, V., Jena, B. and Kalra, S., 2013. Qualitative research. *Perspectives in clinical research*, *4*(3).

Paul, R.W. and Binker, A.J.A., 1990. *Critical thinking: What every person needs to survive in a rapidly changing world*. Center for Critical Thinking and Moral Critique, Sonoma State University, Rohnert Park, CA 94928.

Perry, V.G. and Morris, M.D., 2005. Who is in control? The role of self-perception, knowledge, and income in explaining consumer financial behavior. *Journal of consumer affairs*, 39(2), pp.299-313.

Pompian, M., 2006. *Behavioural Finance and Wealth Management: How to Build Optimal Portfolios That Account for Investor Biases*. New Jersey: John Wiley & Sons.

Pompian, M.M., 2011. *Behavioral finance and wealth management: how to build investment strategies that account for investor biases* (Vol. 667). John Wiley & Sons.

Potrich, A.C.G., Vieira, K.M. and Kirch, G., 2015. Determinants of financial literacy: Analysis of the influence of socioeconomic and demographic variables. *Revista Contabilidade & Finanças*, 26(69), p.362. Available from: http://www.scielo.br/pdf/rcf/v26n69/en_1808-057x-rcf-26-69-00362.pdf [Accessed 10/07/2018].

Prusty, S., 2011. Household Saving Behaviour: Role of Financial Literacy and Saving Plans. *Journal of World Economic Review*, 6(1), pp.75-86.

Pudlo, P. and Gavurová, B., 2012. Experimental learning in higher education, using simulation games as learning tool. *International Multidisciplinary Scientific GeoConference: SGEM*, 3, p.1093.

Puri, M. and Robinson, D.T., 2007. Optimism and economic choice. *Journal of financial economics*, *86*(1), pp.71-99. Available from: https://faculty.fuqua.duke.edu/~mpuri/papers/puri_robinson_jfe.pdf [Accessed: 09/01/2019].

Rabin, M., 2002. Inference by believers in the law of small numbers. *The Quarterly Journal of Economics*, *117*(3), pp.775-816. Available from: https://academic.oup.com/qje/articleabstract/117/3/775/1932993?redirectedFrom=fulltext [Accessed 12/04/2019].

Rappaport, A. and Mauboussin, M. J., 2001. Pitfalls to Avoid. *Supplement to Expectations Investing*. 1-7.
Available from: http://www.expectationsinvesting.com/pdf/pitfalls.pdf [12/04/2019].

Raykov, T. & Marcoulides, G. A., 2012. *A first course in structural equation modeling.* 2nd ed. Mahwah, NJ: Routledge.

Remenyi, D., Williams, B., Arthur, M. and Ethné, S. 1998. *Doing Research in Business and Management. An Introduction to Process and Method*. London: Sage.

Remund, D.L., 2010. Financial literacy explicated: The case for a clearer definition in an increasingly complex economy. *Journal of consumer affairs*, *44*(2), pp.276-295. Available from: https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.17456606.2010.01169.x [Accessed 23/10/2018].

Robb, C. A., and Woodyard, A. S., 2011. Financial Knowledge and Best Practice Behavior. *Journal of Financial Counselling and Planning*. 22, 60–70. https://psycnet.apa.org/record/2011-18553-005 [Accessed 12/01/2020].

Robson, C., 2002. *Real World Research: A Resource for Social Scientists and Practitioner-Researchers*. 2nd edition, London: Blackwell Publishing Ltd.

Rooij, M. V., Lusardi, A. and Alessie, R., 2007. Financial Literacy and Stock Market Participation. *Working Paper* 13565. Available from: https://www.dartmouth.edu/~alusardi/Papers/Literacy_StockMarket.pdf [Accessed 09/11/2019].

Russia's G20 and OECD, 2013. Advancing National Strategies for Financial Education: Summary of the Joint Russia's G20 Presidency and OECD Publication. Available from: http://www.oecd.org/finance/financial-education/advancing-national-strategies-for-financial-education.htm [Accessed 21 March 2018].

Ryan, G., 2018. Introduction to positivism, interpretivism and critical theory. Nurse researcher, 25(4), pp.41-49. Doi:10.7748/nr.2018.e1466.

Sahin, M. and Baris, S., 2017. Finansal okuryazarlık ve tasarruf davranışları: Kamu çalışanları üzerine bir inceleme. *Çankırı Karatekin Üniversitesi İİBF Dergisi*, *7*(2), pp.77-103. Available from : https://dergipark.org.tr/tr/download/article-file/383519 [Accessed 07/10/2020].

Sarac, E., 2014. Financial Literacy and A Study on Measurement of Financial Literacy Levels of Dumlupinar University Students. (Master Dissertation Thesis) Dumlipinar University.
Available from: https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp [Accessed 12/05/2018].

Sarigul, H., 2014. A Survey of Financial Literacy Among University Students. *Journal of Accounting & Finance*, (64). Available from: http://journal.mufad.org.tr/index.php?option=com_content&view=article&id=767%3Aa-survey-of-financial-literacy-among-university-students&catid=946%3Asayi-64ekim-2014&Itemid=55&lang=tr [Accessed 14/03/2018].

Sarlak, Z., 2012. *Aile Bütçesi ve Kaynak Yönetimi*. 2nd Edition,İstanbul:Nakış Ofset.

Saunders, M., Lewis, P. and Thornhill, A., 2009. *Research Methods for Business Students*. Prentice Hall.

Schermelleh-Engel, K., Moosbrugger, H. & Müller, H., 2003. Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of psychological research online,* 8(2), pp. 23-74.

Schumacker, R. E. & Lomax, R. G., 2012. *A beginner's guide to structural equation modeling.* 3rd ed. Mahwah, NJ: Psychology Press.

Selvakumar, M, Anbuchezhienkamaraj, P, Sathyalakshmi, V, Mohammed A, and Siddique, R., 2018. Role of Commercial Banks in Financial Literacy. *Productivity*.59-2. Available from: http://eds.a.ebscohost.com.bathspa.idm.oclc.org/eds/pdfviewer/pdfviewer?vid=1&sid=23b887db-d210443986ed9086223eec7f%40sdcvsessmgr04[Accessed18/10/2018].

Sermaye Piyasası Kurulu (SPK), 2010. *Yatırım Fonları*. SPK Yatırımcı Bilgilendirme Kitapçıkları. Ankara.

Sermaye Piyasası Kurulu (SPK), 2012. Yatırım Yaparken Nelere Dikkat Etmeliyim?. SPK Yatırımcı Bilgilendirme Kitapçıkları. Ankara

Sevim, N., Temizel, F. and Sayılır, O., 2012. The effects of financial literacy on the borrowing behaviour of Turkish financial consumers. *International Journal of Consumer Studies*, 36(5), pp.573-579. Doi:10.1111/j.1470-6431.2012.01123.x [Accessed 10/01/2020].

Sezer, D. and Demir, S., 2015. Yatırımcıların Finansal Okuryazarlık ve Bilişsel Yetenek Düzeylerinin Psikolojik Yanılsamalar ile İlişkisi. *Journal of Accounting & Finance*. Doi: 10.25095/mufad.396532.

Shefrin, H., 2002. Behavioral decision making, forecasting, game theory, and role-play. *International journal of forecasting*, *18*(3), pp.375-382. Available from: http://forecastingprinciples.com/files/pdf/Shefrin%202002.pdf [Accessed:01/08/2018].

Shefrin, H., 2010. *Behaviouralizing Finance, Foundations and Trends in Finance*. USA: Now Publishers Inc.

Smith, M., 2018. How young are “young people”? And at what age does a person become “old”? | YouGov. [online] Yougov.co.uk. Available at: <https://yougov.co.uk/topics/politics/articles-reports/2018/03/06/how-young-are-young-people-and-what-age-does-perso> [Accessed 11 March 2021].

Sohn, S.H., Joo, S.H., Grable, J.E., Lee, S. and Kim, M., 2012. Adolescents’ financial literacy: The role of financial socialization agents, financial experiences, and money attitudes in shaping financial literacy among South Korean youth. *Journal of adolescence*, *35*(4), pp.969-980. Available from: https://acelscdncom.bathspa.idm.oclc.org/S0140197112000073/1s2.0S0140197112000073main.pdf?_tid=2ea1546fc98c43bbb2965afddca2f5b1&acdnat=1541583583_ab770a5f4560a2b7963166971e8688c0 [Accessed: 07/11/2018].

Stango, V. and Zinman, J., 2006. Fuzzy math and red ink: Payment/interest bias, intertemporal choice and wealth accumulation. *Hanover, NH: Dartmouth College*. Available from: http://www.dartmouth.edu/~jzinman/Papers/Stango%26Zinman_Fuzzy%20Math%20and%20Intertemp%20Choices.pdf [Accessed: 20/05/2020].

Strauss, M.E. and Smith, G.T., 2009. Construct validity: Advances in theory and methodology. *Annual review of clinical psychology*, *5*, pp.1-25.

Strydom, H., 2013. An evaluation of the purposes of research in social work. *Social Work/Maatskaplike Werk*, *49*(2).

Stumm, S., O'Creevy, M.F. and Furnham, A., 2013. Financial capability, money attitudes and socioeconomic status: Risks for experiencing adverse financial events. *Personality and Individual Differences*, *54*(3), pp.344-349. Available from: https://acelscdncom.bathspa.idm.oclc.org/S0191886912004795/1s2.0S0191886912004795main.pdf?_tid=c53b686b9ee346f6a27558fbdf88ef1d&acdnat=1541590640_78c476262cc9c19f1f0c42ffeaee6987 [Accessed 07/11/2018].

Sukamolson, S., 2007. Fundamentals of quantitative research. *Language Institute Chulalongkorn University*, *1*, pp.2-3.

Temizel, F., and Bayram, F., 2011. Finansal Okuryazarlık: Anadolu Üniversitesi İktisadi İdari Bilimler Fakültesi (İİBF) Öğrencilerine Yönelik Bir Araştırma. *C.Ü. İktisadi ve İdari Bilimler Dergisi*. 73-86. Available from: http://www.acarindex.com/dosyalar/makale/acarindex-1423875070.pdf [Accessed 02/11/2018].

The Consumer Financial Protection Bureau CFPB, 2015. Financial Well-Being: The Goal of Financial Education. Available from: https://www.consumerfinance.gov/data-research/research-reports/financial-well-being/ [Accessed: 07/01/2020].

The Guardian, 2019. Start off in a friendly manner: How to have the money conversation. Available from: https://www.theguardian.com/money/2019/nov/02/start-friendly-manner-how-to-talk-about-money-finances-pay [Accessed 16/11/2018].

The Money Charity, 2018. The Money Statistics. Available from: https://themoneycharity.org.uk/media/April-2018-Money-Statistics.pdf [Accessed 16/11/2018].

Tomášková, H., Mohelská, H. and Němcová, Z., 2011. Issues of financial literacy education. *Procedia-Social and Behavioral Sciences*, *28*, pp.365-369. Available from:

http://www.researchgate.net/profile/Hana_Tomaskova/publication/235744601_Issues_of_Financial_Literacy_Education/links/00b495287ddd075a01000000.pdf [Accessed 17/12/2019].

Tschache, C.A., 2009. *Importance of financial literacy and financial literacy content in curriculum* (Doctoral dissertation, Montana State University-Bozeman, College of Education, Health & Human Development). Available from: https://scholarworks.montana.edu/xmlui/bitstream/handle/1/2449/TschacheC0809.pdf [Accessed 03/07/2018].

Turkey Economy Bank, 2017. Finansal Okuryazarlik. Available from: https://www.teb.com.tr/finansal-okuryazarlik/ [Accessed 20/11/2018].

Turkey Spread to Financial Base Conference, 2014. *3-4 Haziran 2014 İstanbul, Türkiye*. Available from: https://www.worldbank.org/tr/events/2014/06/03/turkey-financial-inclusion-conference [Accessed 15/01/2020].

TRCB, 2011. Dünyada ve Türkiye'de Finansal Hizmetlere Erişim ve Finansal Eğitim. Available from: https://www.tcmb.gov.tr/wps/wcm/connect/362bbf127d9547eb9d4d13039893ce5e/finansal_egitim.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE362bbf127d95-47eb-9d4d-13039893ce5e-m3fBalY [Accessed 13/12/2019].

TRCB, 2014. Finansal Erişim, Finansal Eğitim, Finansal Tüketicinin Korunması Stratejisi ve Eylem Planları. Ankara. Available from: http://www.tcmb.gov.tr/wps/wcm/connect/94da4743405546a6a3303fe35d2ba9b9/eylemplani.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE94da4743405546a6-a330-3fe35d2ba9b9-m3fzkQA [Accessed: 28/12/2018].

Turkey Statistical Institution, 2018. Gross Domestic Product Database. Available from: http://www.turkstat.gov.tr/PreTabloArama.do [Accessed 15/07/2018].

Turkey Statistical Institution, 2019a. Gelir ve Yaşam Koşulları Araştırması (Kesit) 2011 Mikro Veri Seti. Available from: http://www.tuik.gov.tr/MicroVeri/GYKA_2011/turkce/metaveri/tanim/gelirleilgilikavramlar/index.html [Accessed 17/12/2019].

Turkey Statistical Institution, 2019b. Gelir ve Yaşam Koşulları Araştırması (Kesit) 2013 Mikro Veri Seti. Available from: http://www.tuik.gov.tr/MicroVeri/GYKA_Panel_2013/turkce/metaveri/tanim/gelirle-ilgili-kavramlar/index.php [Accessed 17/12/2019].

Tversky, A. and Kahneman, D., 1971. Belief in the Law of Small Numbers. *Psychological Bulletin*. 76(2), 105-110. Available from: http://stats.org.uk/statistical-inference/TverskyKahneman1971.pdf [Accessed: 30/04/2019].

Tversky, A. and Kahneman, D., 1974. Judgment under Uncertainty: Heuristics and Biases. Science. 185(4157), 1124-1131. Doi:10.1126/science.185.4157.1124 [Accessed: 30/04/2019].

Tversky, A. and Kahneman, D., 1981. The framing of decisions and the psychology of choice. *science*, *211*(4481), pp. 453-458. Available from: https://science.sciencemag.org/content/211/4481/453 [Accessed: 01/05/2019].

Tversky, A. and Kahneman, D., 1983. Extensional Versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment. *Psychological Review*. 90(4), 293-315. Available from: https://psycnet.apa.org/record/1984-03110-001 [Accessed: 30/04/2019].

UCL, 2018. England Has One of The Lowest Levels of Financial Literacy, Study Says. 15 March. Available from: https://www.ucl.ac.uk/ioe/news/2018/mar/england-has-one-lowest-levels-financial-literacy-study-says [Accessed 30/10/2018].

Usul, H., Bekçi, I. and Eroğlu, A.H., 2002. Bireysel Yatirimcilarin Hisse Senedi Edinimine Etki Eden Sosyo-Ekonomik Etkenler. *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, (19), pp.135-150. Available from: http://webcache.googleusercontent.com/search?q=cache:http://iibf.erciyes.edu.tr/dergi/sayi19/07_Usul_Bekci_Eroglu.pdf [Accessed 30/12/2019].

Vera, J.J.V., 2017. Financial Literacy and Behavioral Skills: The Influence of Financial Literacy Level on Behavioral Skills. *EBEEC Conference Proceedings* Doi:10.18502/kss.v1i2.670.

Vijayvargy, L. and Bakhshi, P., 2018. Financial Literacy and Financial Inclusion in Rajasthan, India: An Empirical Study. *IUP Journal of Applied Finance*, *24*(3), pp.35-53. Available from: http://eds.a.ebscohost.com.bathspa.idm.oclc.org/eds/pdfviewer/pdfviewer?vid=1&sid=fc71c8c2-6c314d5392eec1233c2163c8%40sessionmgr4007[Accessed24/10/2018].

Volpe, R.P., Kotel, J.E. and Chen, H., 2002. A survey of investment literacy among online investors. *Journal of Financial Counseling and Planning*, 13(1), p.1. Available from:http://u.osu.edu/hanna.1/financial-counseling-andplanning/132/volpe/[Accessed 03/07/2018].

Wagland, S.P. and Taylor, S., 2009. When it comes to financial literacy, is gender really an issue?. *Australasian Accounting, Business and Finance Journal*, *3*(1), p.3. Available from: https://pdfs.semanticscholar.org/b23a/afcba36c62888a21941513a9f4c52037bb9a.pdf [Accessed 07/01/2020].

Whitebread and Bingham, 2013. *Habit Formation and Learning in Young Children*. The Money Advice Service, London.

Williams, P.F., 2003, September. Modern accounting scholarship: The imperative of positive economic science. In *Accounting Forum* (Vol. 27, pp. 251-269). Available from:https://papers.ssrn.com/sol3/papers.cfm?abstract_id=443402&rec=1&srcabs=314577&pos=3 [Accessed 15/05/2020].

Williams, C., 2011. Research methods. *Journal of Business & Economics Research*. (JBER), 5(3).

World Bank, 2010. Financial Access 2010: The State of Financial Inclusion through the Crisis. *Consultative Group to Assist the Poor/The World Bank Group MSN P 3-300*. Available from: http://documents.worldbank.org/curated/en/997001468160497796/pdf/633320WP0Finan00Box0361513B0PUBLIC0.pdf [Accessed 13/11/2018].

World Bank, 2012. Good Practices for Financial Consumer Protection. Washington DC, p.88. Available from:

https://siteresources.worldbank.org/EXTFINANCIALSECTOR/Resources/Good_Practices_for_Financial_CP.pdf [Accessed 15/12/2019].

Xiao, J.J. and Porto, N., 2017. Financial education and financial satisfaction. International Journal of Bank Marketing. Available from: https://www.emeraldinsight.com/doi/abs/10.1108/IJBM0120160009?fullSc=1&journalCode=ijbm [Accessed: 27/12/2018].

Xu, L. and Zia, B., 2012. *Financial literacy around the world: an overview of the evidence with practical suggestions for the way forward*. The World Bank. Available from: https://ssrn.com/abstract=2094887 [Accessed 10/05/2018].

Xue, R., Gepp, A., O'Neill, T.J., Stern, S. and Vanstone, B.J., 2019. Financial literacy amongst elderly Australians. *Accounting & Finance*, *59*, pp.887-918. Available from: https://onlinelibrary.wiley.com/doi/pdf/10.1111/acfi.12362 [Accessed: 25/10/2018].

Yamauchi, K.T. and Templer, D.J., 1982. The development of a money attitude scale. *Journal of personality assessment*, *46*(5), pp.522-528.

Yardımcıoğlu, M. and Yörük, A., 2016. Türkiye'deki finansal okuryazarlığın ve finansal farkındalığın durumu. *Muhasebe ve Vergi Uygulamaları Dergisi*, *9*(2), pp.173-208.

Yin, R. K., 2003. *Case Study Research: Design and Methods*. Thousand Oaks, CA: Sage.

9. APPENDIX

Appendix 1: Financial Literacy Survey

Determinations of Financial Literacy among Young Adults

Part 1: Socio-Demo: Questionnaire consist of background questions about the participant. This section will be used for comparison.

1	Which city are you living?	a) Bristol b) Istanbul
1	Gender	b) Male b) Female
2	Education	a) Post-graduate education or equivalent (e.g. master's degree, PhD or advanced professional training) b) University-level education (e.g. degree or higher-level vocational training) c) Upper secondary school or high school d) Lower secondary school or middle school (where relevant) e) Primary school f) No formal education
3	Please could you tell me your marital status?	a) Married b) Single c) Divorced d) Widowed
4	Which of these best describes your current work situation?	a) Self-employed (work yourself) b) In paid employment (work for someone else) c) Apprentice d) Unemployed e) Unable to work due to sickness or ill-health f) Not working and not looking for work g) Student
5	Please could you tell me your annual income before tax?	a) 0-9999 b) 10000- 19999 c) 20000 – 29999 d) 30000 – 39999 e)40000 – 59999 f) +60000

Part 2: Financial Knowledge: Financial knowledge questions will consist of multiple selection, open ended questions and true/false questions. You can use calculator.

1	How would you rate your overall knowledge about financial matters?	a) Very high b) Quite high c) About average d) Quite low e) Very low f) Do not know
2	Imagine that five brothers are given a gift of £100. If the brothers have to share the money equally how much does each one get?	.....

3	Now imagine that the brothers have to wait for one year to get their share from £100. In one year's time will they be able to buy:	a) More, b) The same amount, or c) Less than they could buy
4	You lend £50 to a friend one evening and he gives you £50 back the next day. How much interest has he paid on this transaction?	……
5	Suppose you put £100 into a savings account with a guaranteed interest rate of 1% per year. You don't make any further payments into this account and you don't withdraw any money. How much would be in the account at the end of the first year, once the interest payment is made?	……..
6	How much would be in the account at the end of five years? Would it be:	a) More than £105 b) Exactly £105 c) Less than £105 d) Or is it impossible to tell from the information given
7	An investment with a high return is likely to be high risk	a) True b) False
8	High inflation means that the cost of living is increasing rapidly	a) True b) False
9	It is usually possible to reduce the risk of investing in the stock market by buying a wide range of stocks and shares	a) True b) False

Part 3: Financial Behaviour: Financial behaviour questions will consist of multiple selection, true/false questions and five-point Likert Scale. (For multiple selection 1=strongly disagree, 2= disagree, 3=neutral, 4=agree 5= strongly agree)

1	Before I buy something I carefully consider whether I can afford it or not?	1 2 3 4 5
2	I pay my bills on time	1 2 3 4 5
3	I keep a close personal watch on my financial affairs	1 2 3 4 5
4	I set long term financial goals and strive to achieve them	1 2 3 4 5
5	Do you make day-to-day decisions about your own money?	a-) Yes b-) No
6	Which of these statements describe you? (You can choose more than one option)	a-) Make a plan to manage your income and expenses b-) Keep a note of your spending c-) Keep money for bills separate from day-to-day spending money d-) Make a note of upcoming bills to make sure you don't miss them e-) Use a banking app or money management tool to keep track of your outgoings f-) Arrange automatic payments for regular outgoings

7	In the past 12 months have you been saving money in any of the following ways?	a-) Saving cash at home or in your wallet b-) Paying money into an account c-) Giving money to family to save on your behalf d-) Buying bonds or time deposits e-) Investing in crypto-assets f-) Investing in stocks and shares g-) Saving or investing in some other way, other than a pension
8	If you, personally, faced a major expense today – equivalent to your own monthly income – would you be able to pay it without borrowing the money or asking family or friends to help?	a-) Yes b-) No c-) Do not Know

Part 4: Financial Attitude: Financial attitude questions will consist of five point Likert scale questions. (For multiple selection 1=strongly disagree, 2= disagree, 3=neutral, 4=agree 5= strongly agree)

1	I tend to live for today and let tomorrow take care of itself	1 2 3 4 5
2	I find it more satisfying to spend money than to save it for the long term	1 2 3 4 5
3	Money is there to be spent	1 2 3 4 5

Part 5: Culture: Culture questions will consist of five point Likert scale questions. (For multiple selection 1=strongly disagree, 2= disagree, 3=neutral, 4=agree 5= strongly agree)

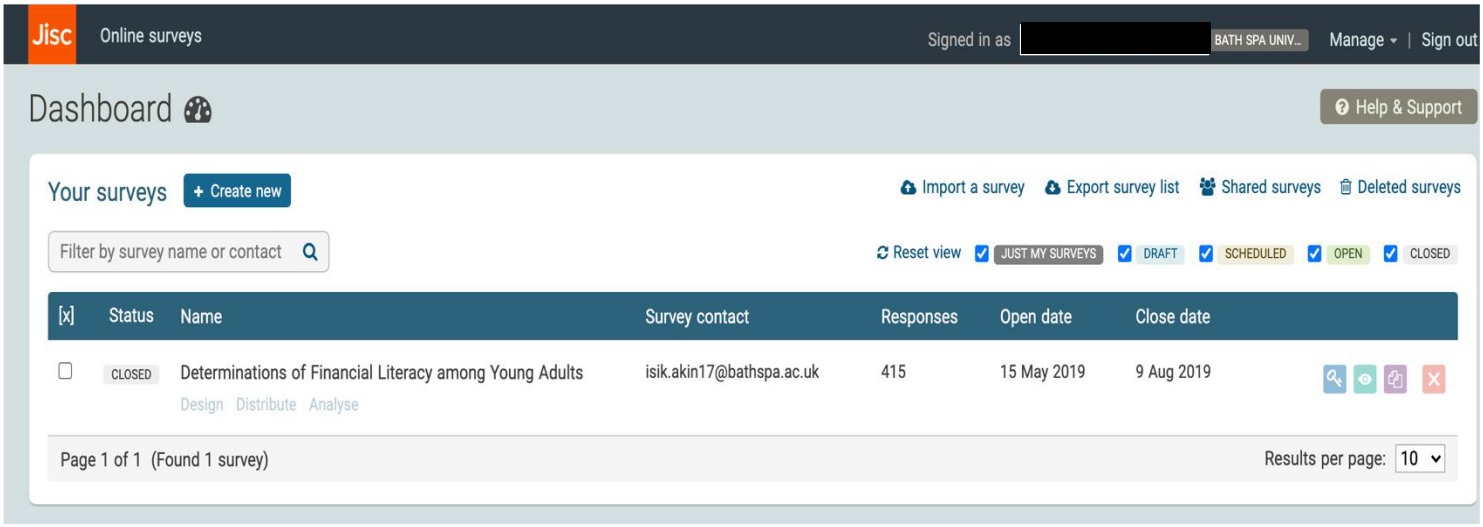
1	I am a person who is willing to take risks.	1 2 3 4 5
2	I rather go without something today in order to be able to afford more tomorrow	1 2 3 4 5
3	I tend to procrastinate tasks even though it would be better to them immediately	1 2 3 4 5
4	I am prepared to spend now and let the future take care of itself	1 2 3 4 5
5	You should not spend more than what you have	1 2 3 4 5
6	You should not have debts	1 2 3 4 5
7	For me, money is a tool to accomplish goals	1 2 3 4 5
8	Money gives me the freedom to do what I feel like	1 2 3 4 5
9	For me, money is a tool to make friends	1 2 3 4 5
10	I am prepared to do everything in order to get money	1 2 3 4 5

Part 6: Behavioural Biases: Behavioural biases questions will consist of five-point Likert scale questions. (For multiple selection 1=strongly disagree, 2= disagree, 3=neutral, 4=agree 5= strongly agree)

1	The best investment is investment made by everyone.	1 2 3 4 5
2	Past returns of investments are very important before making investment.	1 2 3 4 5
3	Positive news about the area, that I am thinking to invest, encourages me.	1 2 3 4 5
4	It affects me positively, if people whose opinions are valuable for me, invest in the same areas with me.	1 2 3 4 5
5	I am able to predict exchange rates.	1 2 3 4 5

6	I have done successful investments, due to my financial skills.	1 2 3 4 5
7	The investments that I was unsuccessful were due to being unlucky.	1 2 3 4 5
8	When the shares I bought lost value, I wait until its value increase to the price at the beginning.	1 2 3 4 5
9	When there are negative news about an investment I have made, I wait before taking any action, and I keep my investment.	1 2 3 4 5
10	I will earn more from my future investments comparing to my past experiences.	1 2 3 4 5
11	I make sure the area I will invest often takes place in the news.	1 2 3 4 5
12	Before I invest, I get advice from financial advisor or from my friends.	1 2 3 4 5
13	When I signed a mortgage deed with a bank, I do not want to learn conditions of another bank. Because learning that I would be able to have a mortgage with less interest rate makes me unhappy.	1 2 3 4 5
14	In case of earning £25 with probability of 100% or earning £100 with probability of 75%. I will go for the first option.	1 2 3 4 5
15	In case of losing £75 with the probability of 100% or losing £100 with the probability of 75%, I will go for the second option.	1 2 3 4 5
16	When a dice is thrown 9 times, and it shows 5, the probability of showing 5 on the 10^{th} throw is very unlikely.	1 2 3 4 5
17	If my knowledge increases in the area that I will invest, my possible investment return will increase as well.	1 2 3 4 5
18	The investment decisions that I made myself are more profitable than the investments that I do by getting advice from advisor.	1 2 3 4 5
19	There is not a big difference between investing in two shares that belong to same industry.	1 2 3 4 5
20	If I am in the situation of choosing from two options: losing £300 with 100% probability or losing £400 with 80%. I will go for the second alternative.	1 2 3 4 5
21	I can say that I am more capable of financial issues compared to an average investor.	1 2 3 4 5
22	The probability of lost as a result of my own decisions is low.	1 2 3 4 5

Appendix 2: Survey Dashboard



Appendix 3: Completed Survey Sample

Jisc Online surveys

Determinations of Financial Literacy among Young Adults

Response ID	Start date	Completion date	
[redacted]	16 May 2019, 16:41 (BST)	16 May 2019, 17:01 (BST)	

1	Consent Form for Research: Determinations of Financial Literacy among Young Adults Please click the appropriate boxes	
1.1	• I have read and understood the information provided by the accompanying information sheet.	YES
1.2	• I understand why I am eligible to take part in the research study.	YES
1.3	• I understand that I have the right to withdraw myself from the project at any time without having to give a reason.	YES
1.4	• I understand that information I provide will be used for PhD research or academic publication.	YES
1.5	• I understand the aim of this project and what is required of me.	YES
1.6	• I agree to the arrangements stated in the information sheet regarding my participation.	YES
1.7	• I understand how to withdraw my information.	YES
1.8	• I understand that no personally identifiable information will be attached my survey responses.	YES
1.9	• No contact information of my own will be retained (e.g. email address).	YES
1.10	• I give permission for the survey data that I provide to be deposited in BathSpa Figshare so it can be used for future research and learning.	YES

2	Which city are you living?	Istanbul

3	Gender	Female

4	Education	University-level education (e.g. degree or higher-level vocational training)

5	Please could you tell me your marital status?	Married
6	Which of these best describes your current work situation?	In paid employment (work for someone else)
7	Please could you tell me your annual income before tax?	20000 – 29999
8	How would you rate your overall knowledge about financial matters?	About average
9	Imagine that five brothers are given a gift of £100. If the brothers have to share the money equally how much does each one get?	£20
10	Now imagine that the brothers have to wait for one year to get their share from £100. In one year's time will they be able to buy:	b) The same amount, or
11	You lend £50 to a friend one evening and he gives you £50 back the next day. How much interest has he paid on this transaction?	None
12	Suppose you put £100 into a savings account with a guaranteed interest rate of 1% per year. You don't make any further payments into this account and you don't withdraw any money. How much would be in the account at the end of the first year, once the interest payment is made?	
13	How much would be in the account at the end of five years? Would it be:	More than £105
14	An investment with a high return is likely to be high risk	True
15	High inflation means that the cost of living is increasing rapidly	True
16	It is usually possible to reduce the risk of investing in the stock market by buying a wide range of stocks and shares	False

17	Please rate the extent to which you agree with the following statements (1=strongly disagree, 2= disagree, 3=neutral, 4=agree 5= strongly agree)	
17.1	I tend to live for today and let tomorrow take care of itself	1

17.2	I find it more satisfying to spend money than to save it for the long term	1
17.3	Money is there to be spent	1

18	Please rate the extent to which you agree with the following statements (1=strongly disagree, 2= disagree, 3=neutral, 4=agree 5= strongly agree)	
18.1	Before I buy something I carefully consider whether I can afford it or not?	5
18.2	I pay my bills on time	5
18.3	I keep a close personal watch on my financial affairs	5
18.4	I set long term financial goals and strive to achieve them	3

19	Do you make day-to-day decisions about your own money?	No

20	Which of these statements describe you? (You can choose more than one option)	Make a plan to manage your income and expenses

21	In the past 12 months have you been saving money in any of the following ways?	Saving or investing in some other way, other than a pension

22	If you, personally, faced a major expense today – equivalent to your own monthly income – would you be able to pay it without borrowing the money or asking family or friends to help?	Do not Know

23	Please rate the extent to which you agree with the following statements (1=strongly disagree, 2= disagree, 3=neutral, 4=agree 5= strongly agree)	
23.1	I am a person who is willing to take risks.	1
23.2	I rather go without something today in order to be able to afford more tomorrow	4
23.3	I tend to procrastinate tasks even though it would be better to them immediately	4
23.4	I am prepared to spend now and let the future take care of itself	1
23.5	You should not spend more than what you have	5
23.6	You should not have debts	4
23.7	For me, money is a tool to accomplish goals	4
23.8	Money gives me the freedom to do what I feel like	4
23.9	For me, money is a tool to make friends	1

24	Please rate the extent to which you agree with the following statements (1=strongly disagree, 2= disagree, 3=neutral, 4=agree 5= strongly agree)	
24.1	The best investment is investment made by everyone.	3
24.2	Past returns of investments are very important before making investment.	3
24.3	Positive news about the area, that I am thinking to invest, encourages me.	4
24.4	It affects me positively, if people whose opinions are valuable for me, invest in the same areas with me.	4
24.5	I am able to predict exchange rates.	1
24.6	I have done successful investments, due to my financial skills.	3
24.7	The investments that I was unsuccessful were due to being unlucky.	1
24.8	When the shares I bought lost value, I wait until its value increase to the price at the beginning.	4
24.9	When there are negative news about an investment I have made, I wait before taking any action, and I keep my investment.	4
24.10	I will earn more from my future investments comparing to my past experiences.	4
24.11	I make sure the area I will invest often takes place in the news.	3
24.12	Before I invest, I get advice from financial advisor or from my friends.	3
24.13	When I signed a mortgage deed with a bank, I do not want to learn conditions of another bank. Because learning that I would be able to have a mortgage with less interest rate makes me unhappy.	5
24.14	In case of earning £25 with probability of 100% or earning £100 with probability of 75%. I will go for the first option.	5
24.15	In case of losing £75 with the probability of 100% or losing £100 with the probability of 75%, I will go for the second option.	5
24.16	When a dice is thrown 9 times, and it shows 5, the probability of showing 5 on the 10th throw is very unlikely.	5
24.17	If my knowledge increases in the area that I will invest, my possible investment return will increase as well.	5
24.18	The investment decisions that I made myself are more profitable than the investments that I do by getting advice from advisor.	5

24.19	There is not a big difference between investing in two shares that belong to same industry.	4
24.20	If I am in the situation of choosing from two options: losing £300 with 100% probability or losing £400 with 80%. I will go for the second alternative.	5
24.21	I can say that I am more capable of financial issues compared to an average investor.	3
24.22	The probability of lost as a result of my own decisions is low.	4